RUGGED CCTV

MANUAL

For the Following DVRs

VERTEX RTH

H.8

H.16

For Technical Assistance please call our Toll Free 866 number or contact us at the below referenced address.

Rugged CCTV
201 N. Elm St.
Kemp, TX 75143

TollFree 866-301-CCTV
Phone 903-498-3240
Fax 903-498-8989

www.rugged-cctv.com

FCC Compliance Statement
Model Name: **H.8 / H.16 and VerteX RTH**
This device complies with Part 15 of the FCC Rules. Operation is Subject to the following two conductions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operations.

■ **WARNING**
Unauthorized reproduction of all or part of this manual is strictly prohibited.
The figures in this manual are for illustration purposes only (may differ from the actual product).
The specifications and design of the product are subject to change without prior notice for purposes of quality improvement.

CAUTIONS
To get the best use out of the product, be sure to read the cautions before using the product. For safety, please take note of the following:

- **Instructions before using the product**

1 To prevent electric shock when installing, moving, or opening the DVR and peripheral devices, connect and disconnect the cables as instructed. All cables must be connected to grounded power outlets.
2 If the product is installed near a power outlet, make sure it can be unplugged easily.
3 Do not use the DVR in water or in wet places.
4 Keep the plastic packing materials used for the DVR or other peripheral devices out of reach of children (may cause suffocation).

- **Installation Environment of the DVR**

1 Maintain the following conditions: operating temperature of 5˚C ~ 40˚C; operating humidity of 10% ~ 80%.
2 Install the DVR in a safe place that is free from external vibration.
3 Install the DVR in a well-ventilated place.
4 To protect the hard disk from data loss and breakdown, install the DVR away from magnetic materials.
5 When using a rack other than the standard one, use a separate table with sufficient spacing, i.e., 60cm from the floor, 50cm from the ceiling, and 20cm from the side and back walls and other objects.

- **Safety Notes on the DVR**

1 When installing additional boards and HDD, separate the power cable and turn OFF power supplied to the DVR completely..
2 Keep the product away from heat-generating devices such as heaters.
3 Do not use a damaged power cord.
4 To prevent problems due to magnetic interference and electric surge, use only grounded cables and power outlets.
5 If the power cord is connected, do not touch the power unit (if the power cord is connected, electric current is still flowing internally even after the switch is turned OFF).
6 Do not place a heavy object on top of the product.
7 Do not drop a conductive object in the ventilation holes.
8 Allot sufficient space for system cabling.
9 Use only the parts indicated in the manual. Do not disassemble, repair, or modify the product without permission.
10 Incorrect system setup may cause malfunction.
11 Shut down the system normally as instructed in the manual.

- **Safety Notes on the Lithium Battery**

1 Replace lithium batteries as instructed to avoid danger.
2 Dispose of used lithium batteries properly.

【Warnings and Cautions are indicated as follows.】

	Possible injury or product damage
	Risk of minor injury or product damage
	Cautions for the usage of the product
	Information for the usage of the product

C/O/N/T/E/N/T/S

Chapter 1. Introduction 7
1-1. VerteX RTH-Series Major Features 7
1-2. H.8 and H.16-Series Major Features 8
1-3. About the Product 8
1-4. Differences between VERTEX RTH-Series and H.8 AND H.16-Series 9
1-5. Components 9
Chapter 2. Installation and Connection 9
2-1. VERTEX RTH-Series Name and Features of Each Part 9
2-1-1. VERTEX RTH-Series Front Part 9
2-1-2. VERTEX RTH-Series 4 Channel Rear Part 9
2-1-3. VERTEX RTH-Series 8 Channel Rear Part 10
2-1-4. VERTEX RTH-Series 16 Channel Rear Part 10
2-2. H.8 AND H.16-Series Name and Features of Each Part 10
2-2-1. H.8 AND H.16-Series Front Panel 10
2-2-2. H.8 AND H.16-412 Rear Panel ..... **Error! Bookmark not defined.**
2-2-3. H.8 AND H.16-8 Rear Panel 11
2-2-4. H.8 AND H.16-16 Rear Panel 11
2-3. Installation and Connection 12
2-3-1. Basic Connection 12
2-3-2. Connection of Other Devices 13
Chapter 3. Operation and Setup Tools 14
3-1. VERTEX RTH-Series Front Button 15
3-2. VERTEX RTH-Series Remote Controller 16
3-3. H.8 AND H.16-Series Front Button 17
3-4. Remote Controller for H.8 AND H.16-Series 18
3-5. Mouse 18
Chapter 4. DVR Operation Setup 19
4-1. VERTEX RTH-Series Storage Installation 19
4-2. H.8 AND H.16-Series Storage Installation 20
4-3. Power ON. 21
4-4. Storage Setup 21
4-5. Recording Setup 22
4-6. Date/Time Setup 23
4-7. Camera / TV Setup 23
4-8. Screen View Setup and Others Setup 23
4-9. External Device Setup 23

4-10. Recording View 23
4-11. Backup 23
4-12. DVR Information View 23
Chapter 5. System Operation 24
5-1. Starting and Exiting the System 24
5-1-1. Starting the System 24
5-1-2. Exiting the System 24
5-2. Monitoring 24
5-2-1. Screen Division and Auto Sequence 24
5-2-2. Channel Grouping 25
5-2-3. Spot (Only for VERTEX RTH series) 25
5-2-4. Menu in Monitoring Mode 25
5-3. System Login 25
5-3-1. User Account and Authorization 25
5-3-2. Login 26
5-3-3. Logout 26
5-4. Audio Recording and Playback 26
5-4-1. Audio Recording Setup 26
5-4-2. Audio Live 26
5-5. System Information View and Display Setup Change 26
5-5-1. System Information 27
5-5-2. Camera Selection for Screen Setup 28
5-5-3. Screen Brightness/Contrast/Hue/Saturation Adjustment 28
5-5-4. Camera Adjustment 28
5-5-5. TV Adjustment 29
5-5-6. Camera Title Shown/Hidden 29
5-5-7. Screen Border Adjustment 29
5-6. Spot Control (Only for VERTEX RTH series) 30
5-7. Relay Out 30
5-8. Search 30
5-8-1. Search Mode 30
5-8-2. Playback Menu 30
5-9. Calendar Search 31
5-9-1. Search Mode 31
5-9-2. Year/Month/Day Selection 31
5-9-3. Directory Count 31
5-9-4. Event 31
5-9-5. Multi-Channel Search 31
5-9-6. Multi-Time Search 32
5-9-7. Multi-Day Search 32
5-10. Playback 32

5-10-1. Playback and Playback Speed Control 33
5-10-2. Smart Search 34
5-10-3. Calendar Search 34
5-10-4. Multi Time 34
5-10-5. Multi Day 34
5-10-6. Multi Channel 34
5-10-7. Event 34
5-10-8. Backup 34
5-10-9. Display Mode 35
5-10-10. Status Bar 35
5-11. Log Viewer 35
5-11-1. Log Type 35
5-11-2. System Log Viewer 35
5-12. Recording 36
5-12-1. Recording Types 36
5-12-2. Recording Setup 36
5-12-3. Recording Status View 37
5-13. Backup 37
5-13-1. Backup in Real-time Monitoring Mode 37
5-13-2. Backup in Search Mode 37
5-13-3. Backup in Log Mode 37
5-13-4. Backup in Playback Mode 37
5-13-5. Common Backup Procedure 38
5-14. Snapshot 39
5-15. PTZ Camera Control 39
5-15-1. Conditions for Using the PTZ Features 39
5-15-2. PTZ Mode 40
5-15-3. PTZ Control 40
Chapter 6. Setup 41
6-1. Time 41
6-1-1. Time Sync 42
6-1-2. Date and Time 43
6-1-3. Time Zone 43
6-2. Recording 44
6-2-1. Recording 44
6-2-2. Data Selection (Data 1 ~ Data 4) 44
6-2-3. Recording Setup 44
6-2-4. Event 46
6-2-5. Alarm Action 48
6-3. Recording Schedule 50
6-3-1. Enter to Recording Schedule Menu 50
6-3-2. Recording Schedule Setup 50

6-4. Storage 51
6-4-1. Private Recording 52
6-4-2. HDD Overwrite 52
6-4-3. Local Storage Management 52
6-5. PTZ 55
6-5-1. PTZ Protocol Setup 55
6-5-2. Camera ID setup 56
6-5-3. Baud Rate Setup 56
6-5-4. Duration Setup 56
6-5-5. Tour Setup 56
6-6. Network 57
6-6-1. Ethernet 57
6-6-2. DDNS 58
6-6-3. Port 60
6-6-4. E-mail 61
6-7. System 61
6-7-1. System Menu 62
6-7-2. DVR Name 62
6-7-3. ID for Remote Controller 62
6-7-4. ID For Key Controller 63
6-7-5. Users 63
6-7-6. Admin. Password 64
6-7-7. Upgrade 64
6-7-8. Factory Setup 65
6-7-9. RS232C Port 65
6-7-10. Error Alarm Action 65
6-7-11. Error Alarm Duration 66
6-7-12. Menu Time Out 66
6-7-13. Language 66
A/P/P/E/N/D/I/X 66
1) Recommended HDD Specification 67
2) Recommended PTZ Camera Protocol 67
3) Recommended USB2.0 Device 67

Figure List

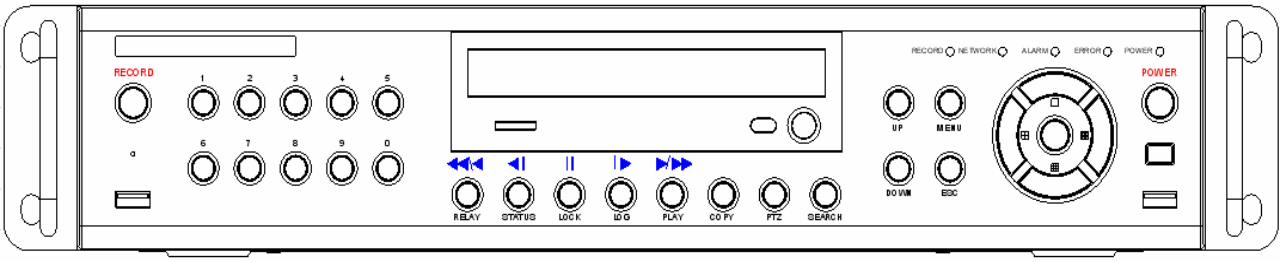
[Figure 2-1. VERTEX RTH-16 Basic Connection and Device Connection] 12

[Figure 2-2. H.8 AND H.16-16 Basic Connection and Device Connection] 12
[Figure 2-3. Terminal Block TB1] 13
[Figure 2-4. Terminal Block TB1 Description] 14
[Figure 4-5. Menu Window] 21
[Figure 4-6. Storage Device Window] 21
[Figure 4-7. Storage Device New Tab Window] 22
[Figure 4-8. Menu Window] 22
[Figure 4-9. Login Window] 26
[Figure 4-10. Recording Status Window] 27
[Figure 4-11. Product Information Window] 28
[Figure 4-12. Camera/TV Setup Window] 28
[Figure 4-13. Screen Setup Window] 29
[Figure 4-14. Spot Control Window] 30
[Figure 4-15. Relay Control Window] 30
[Figure 4-16. Playback Menu Window] 30
[Figure 4-17. Search Window] 31
[Figure 4-18. Playback Screen] 33
[Figure 4-19. Playback Status and Control Window] 33
[Figure 4-20. Playback Menu] 34
[Figure 4-21. Smart Search Motion Detection Window] 34
[Figure 4-22. Display Mode] 35
[Figure 4-23. Log Viewer] 35
[Figure 4-24. Move to the log list of the certain time zone] 36
[Figure 4-25. Backup Window] 38
[Figure 4-26. PTZ Control Window (Max. Mode (Left) / Min. Mode (Right))] 40
[Figure 4-27. PTZ Mode Initial Screen] 40
[Figure 5-28. Time Sync] 42
[Figure 5-29. Date and Time] 43
[Figure 5-30. Standard Time Zone] 43
[Figure 5-31. Recording Window] 44
[Figure 5-32 Letter Input Window] 45
[Figure 5-33. Frame Rate Re-Setup Window] 46
[Figure 5-34. Motion Setup] 47
[Figure 5-35. Motion Setup] 48
[Figure 5-36. Preset Action Setup Window] 49
[Figure 5-37. Recording Schedule Window] 50
[Figure 5-38. Holiday Registration Window] 51
[Figure 5-39. Storage Window (Local)] 52
[Figure 5-40. Storage Offline] 54
[Figure 5-41. Storage Format] 55
[Figure 5-42. Storage formatting in progress message] 55
[Figure 5-43. PTZ Window] 55
[Figure 5-44. PTZ Protocol Window] 56

[Figure 5-45. Tour Setup Window]....57
[Figure 5-46. Setup Network Window] 57
[Figure 5-47. DDNS Window] 58
[Figure 5-48. DDNS Window with MAC Address]....59
[Figure 5-49. DDNS Setting] 59
[Figure 5-50. DDNS Domain name changed] 59
[Figure 5-51. DDNS Status]....60
[Figure 5-52. Port Window]....61
[Figure 5-53. E-mail Window] 61
[Figure 5-54System Setup Window] 62
[Figure 5-55. User Authorization Setup Window]....64
[Figure 5-56. Firmware Upgrade File List Window]....64
[Figure 5-57. Firmware Upgrade Progressing Window] 65
[Figure 5-58. Error Alarm Action]....65
[Figure 5-59. Language Selection Window] 66

Chapter 1. Introduction

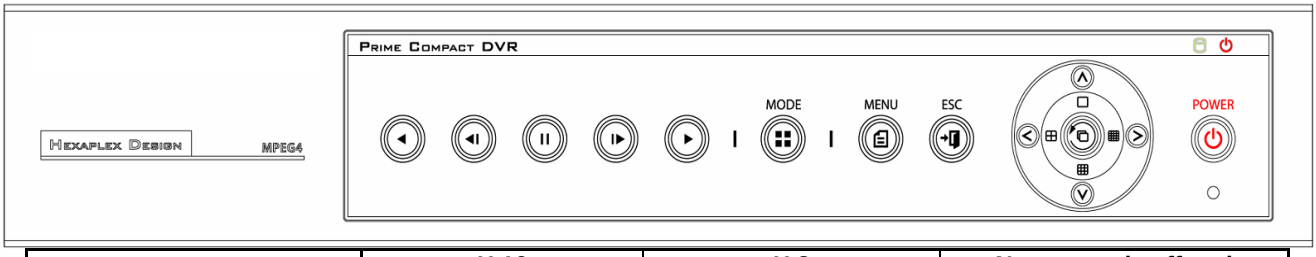
1-1. VERTEX RTH-Series Major Features



		VERTEX RTH-16	VERTEX RTH-8	VERTEX RTH-412
System		Reliable Standalone DVR		
Channel & Frame Rate		16Ch - 480/480	8ch - 240/240	4ch - 120/120
OS		Embedded Linux - Built in Flash Memory		
Video Input		16 BNC	8 BNC	4 BNC
Video Output	**Monitor**	1 BNC, 1 VGA		
	Loop	16 BNC	8 BNC	X
	Spot	1 BNC		X
Audio Input		Line Input : 4 RCA	Line Input : 2 RCA	Line Input : 1 RCA
Audio Output		Line Output : 1 RCA		
Compression Format		[Video : Standard H.264 / Audio : G.723]		
Recording Speed		Max. 480(400)fps	Max. 240(200)fps	Max. 120(100)fps
Recording Resolution		Max. 704 x 480(576)		
Recording mode		Automatic, Continuous, Manual, Events(Sensor and Motion)/Schedule Recording		
Storage		[Internal : Max. 2HDD, Max. 1.5TB]		
Video Output Resolution		LCD : SXGA(1280x1024), TV : SDTV(720x480/576)		
Sensor Input Relay/TTL Output		16 Sensors [1ea NC/NO][3ea TTL Out]	8 Sensors [1ea NC/NO][1ea TTL Out]	4 Sensors [1ea NC/NO]
Backup & Copy Access		DVD-RW, USB2.0, Network		
Network Access		Various Network Interface (Ethernet 10/100, ADSL, Cable modem)		
PTZ Access		RS-485		
Internal HDD / Internal ODD		SATA HDD Max. 2ea / SATA Type DVD		

System Operation & Adjustment	Front Button, Mouse, IR Remote Controller, Keyboard Controller, Network
System Upgrade	USB2.0 Memory Stick, Network
Network	System Automation (Controlled by CMS)
	NTP Supported
	CMS / Monitoring by Web Browser / PDA / Mobile Viewer
Others	15 Languages Supported, Automatic E-mail
	Power [12V/5A] / Max. Power Consumption[40W] / Operating Temperature[5-40℃] Weight without HDD[4kg] / Dimension[430*86*270mm]

1-2. H.8 AND H.16-Series Major Features



	H.16	H.8	Not currently offered
System	Reliable Standalone DVR		
Channel & Frame Rate	16Ch - 480/480	8ch - 240/240	4ch - 120/120
OS	Embedded Linux - Built in Flash Memory		
Video Input	16 BNC	8 BNC	4 BNC
Video Output	1 BNC, 1 VGA		
Audio In/Output	Line Input : 1 RCA / Line Output : 1 RCA		
Compression Format	[Video: Standard H.264 / Audio : G.723]		
Recording Speed	Max. 480(400)fps	Max. 240(200)fps	Max. 120(100)fps
Recording Resolution	Max. 704 x 480(576)		
Recording mode	Auto, Continuous, Manual, Event(sensor, motion)/Schedule Recording		
Storage	[Internal : Max. 2HDD, Max. 1.5TB]		[Internal : Max. 1HDD, Max. 1.5TB]
Video Output Resolution	LCD : SXGA(1280x1024), TV : SDTV(720x480/576)		
Sensor Input **Relay Output**	4 sensors [1ea NC/NO]	4 sensors [1ea NC/NO]	4 sensors [1ea NC/NO]
Backup & Copy Access	USB2.0, Network		
Network Access	Various Network Interface (Ethernet 10/100, ADSL, Cable modem)		
PTZ Access	RS485		
Internal HDD	SATA HDD 2ea		SATA HDD 1ea
System Operation & Adjustment	Front Button, Mouse, IR Remote Controller, Keyboard Controller, Network		
System Upgrade	USB2.0 memory stick, Network		
Network	System Automation (Controlled by CMS)		
	NTP supported		
	CMS / Monitoring by Web Browser / PDA / Mobile Viewer		
Others	15 Languages Supported Automatic E-mail Transmission		
	Power [12V/5A] / Max. Power Consumption[40W] / Operating Temperature[5-40℃] Weight without HDD[3kg] / Dimension[340*58*300mm]		

1-3. About the Product

As a digital image monitoring equipment that can display images inputted from up to 16/8/4 cameras, **VERTEX RTH-Series / H.8 AND H.16-Series** digitally records high-quality images using various video recording modes and displays them as clean quality images.

For users' convenience, front touch pad, remote controller, and mouse are provided. Powerful network functions including remote monitoring and remote system setup modification are also supported. The maximum recording frame rate for **VERTEX RTH-Series / H.8 AND H.16-Series** is 480fps/240fps/120fps.

1-4. Differences between VERTEX RTH-Series and H.8 AND H.16-Series

ITEM	VERTEX RTH-Series	H.8 AND H.16-Series
DVD	OK	NO
Loop Out	OK	NO
Spot Out	OK	NO
Audio Channel	4 / 2 / 1	1 / 1 / 1
Sensor Channel	16 / 8 / 4	4 / 4 / 4
Relay Channel	[1ea NC/NO] [3ea TTL Out]	[1ea NC/NO]
Remote Controller	30 Button(ID not supported)	14 Button(ID supported)
Front Button	29 Button	14 Button
USB port	Front(right & left)	Right Rear side
Dimension	19' RACK SIZE	COMPACT SIZE

1-5. Components

After unpacking the product, check whether the following accessories are included;

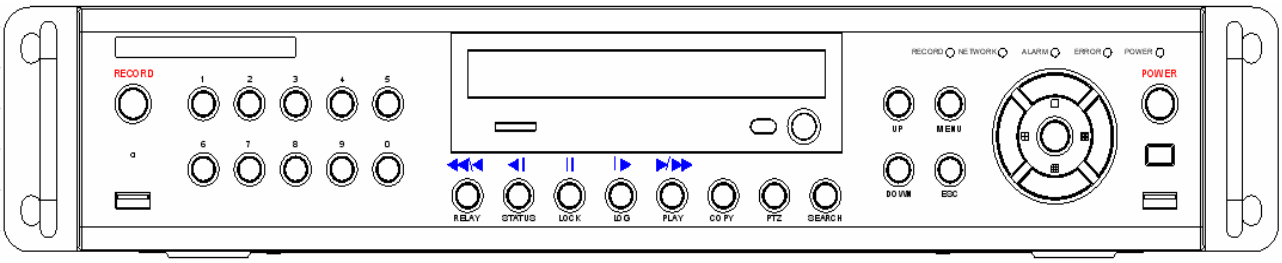
- Remote Controller
- CD (CMS, CMS Manual, PDA Viewer software)
- AAA 1.5V Batteries 2ea
- Adapter (12VDC/3.5A)
- User Manual
- Rack Mounting Handle **(VERTEX RTH-Series only)**

Chapter 2. Installation and Connection

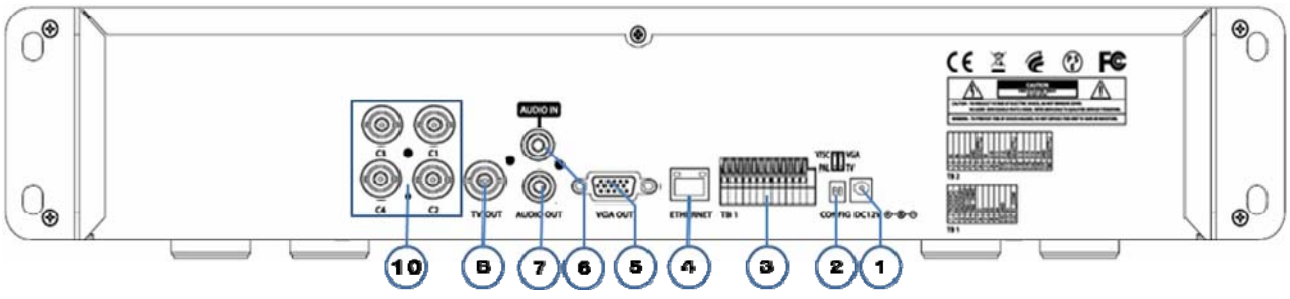
2-1. VERTEX RTH-Series Name and Features of Each Part

The front part of **VERTEX RTH-Series** features an easy-to use button; various interfaces are located on the rear part. They can easily be mounted on a standard rack using the mounting handles (Left/Right).

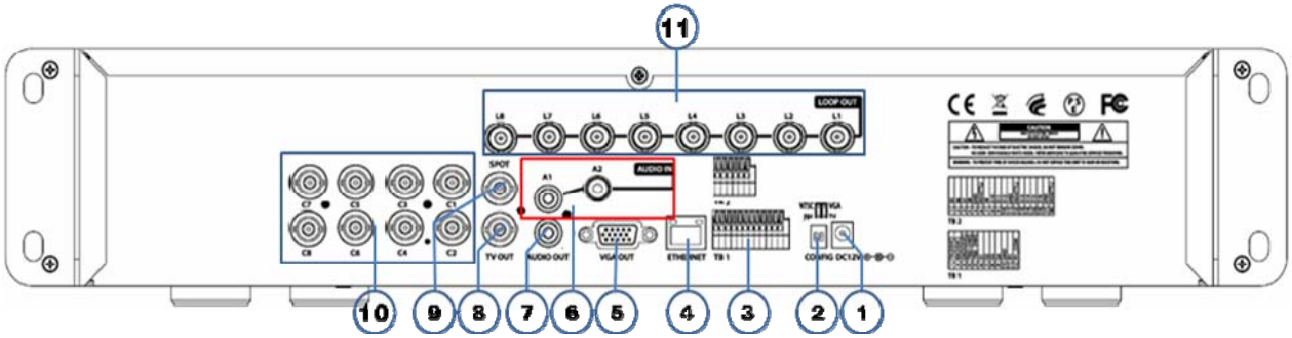
2-1-1. VERTEX RTH-Series Front Part



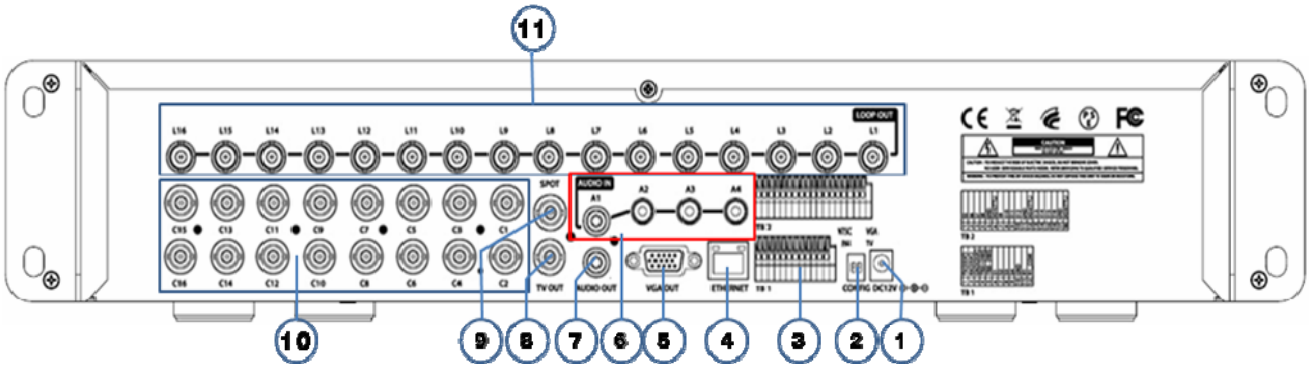
2-1-2. VERTEX RTH-Series 4 Channel Rear Part



2-1-3. VERTEX RTH-Series 8 Channel Rear Part



2-1-4. VERTEX RTH-Series 16 Channel Rear Part

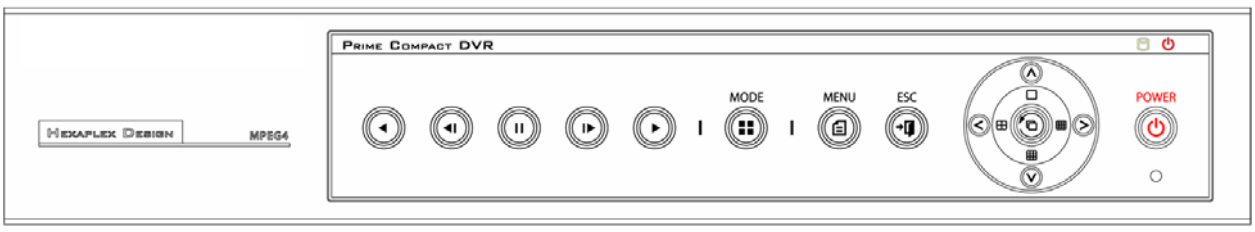


No.	Name	Feature	Format
1	**DC IN**	Power cable connection to the body	
2	**NTSC/PAL** **VGA/TV**	Select the video input format Select the video output format	DA-2
3	**RS485** **DIO**	PTZ Camera Control Connection Sensor/ Relay Connection	Terminal Block
4	**Ethernet**	Network Connection(ADSL, Cable Modem, Ethernet 10/100 Base-T)	RJ-45
5	**VGA-OUT**	VGA Monitor or LCD Monitor Connection	D-SUB 15P
6	**AUDIO IN**	Audio Input Connection(Line Only Input)	RCA
7	**AUDIO OUT**	Audio Output Connection(Line Only Output)	RCA
8	**TV**	CCTV Monitor Connection(Divided Screen)	BNC
9	**SPOT**	CCTV monitor connection to output image from the channel generating an event signal(Full Screen)	BNC
10	**CAMERA IN**	Video Camera Connection	BNC
11	**LOOP OUT**	Video Signal loop-back Output Connection	BNC

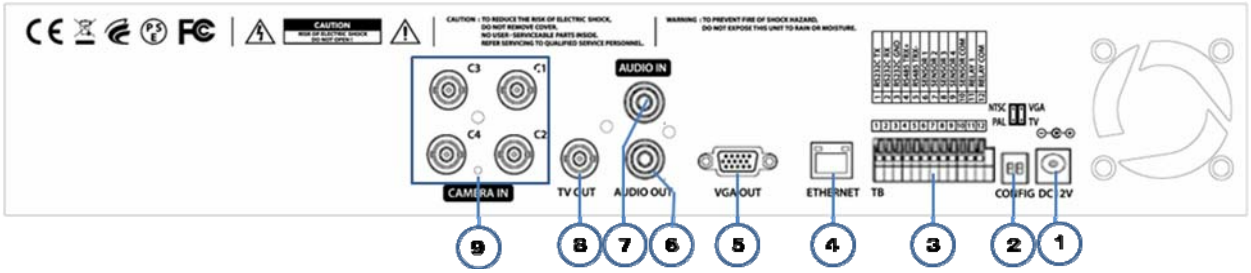
2-2. H.8 AND H.16-Series Name and Features of Each Part

The front part of SM-Series features an easy-to use button; various interfaces are located on the rear part.

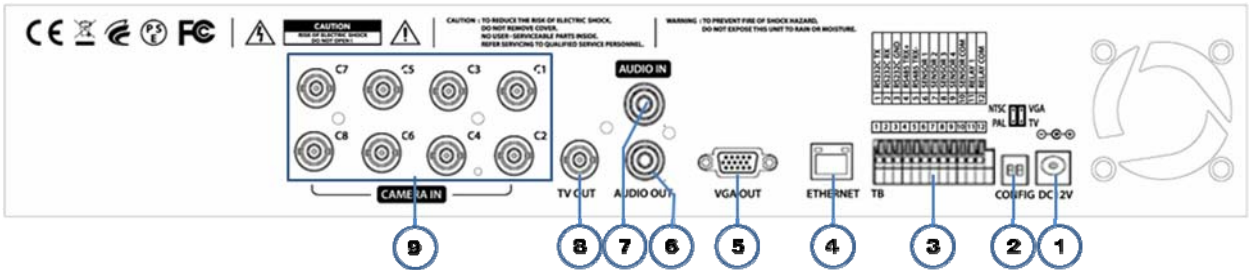
2-2-1. H.8 AND H.16-Series Front Panel



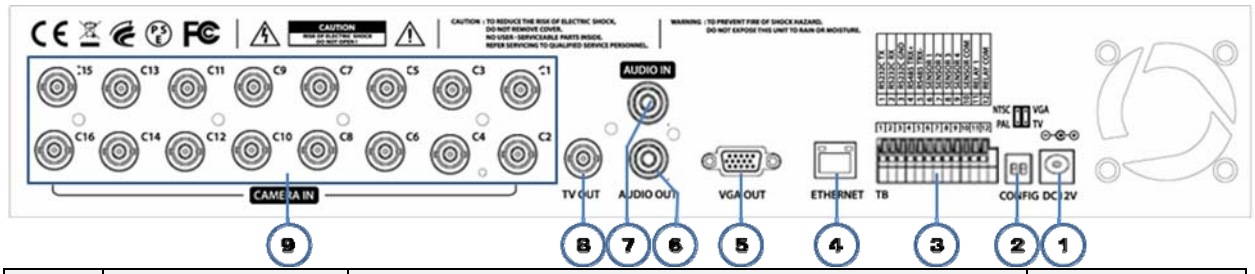
2-2-2. Not currently offered



2-2-3. H.8 Rear Panel

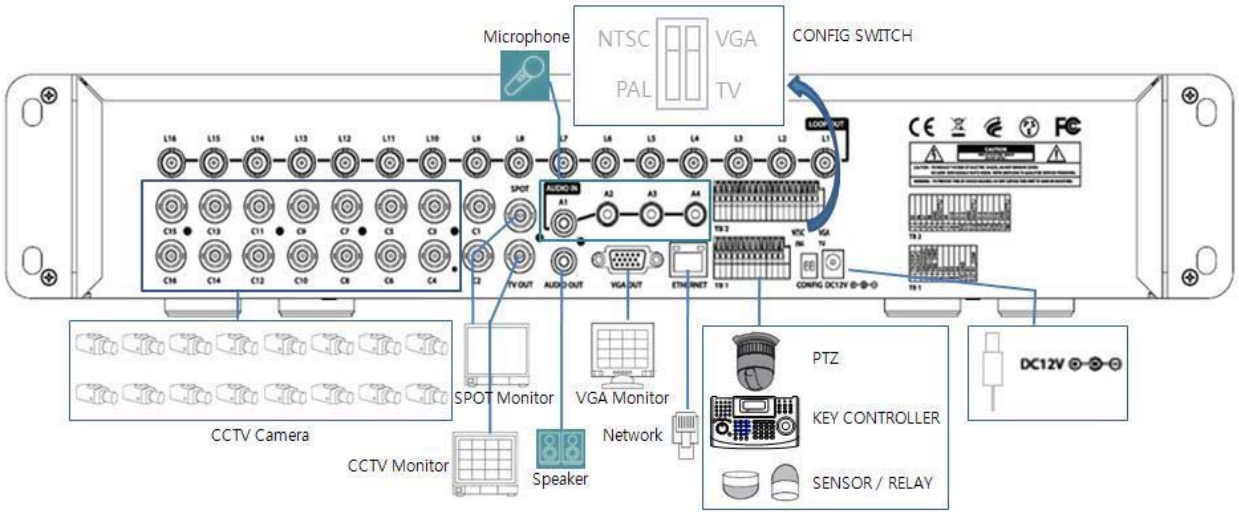


2-2-4. H.16 Rear Panel

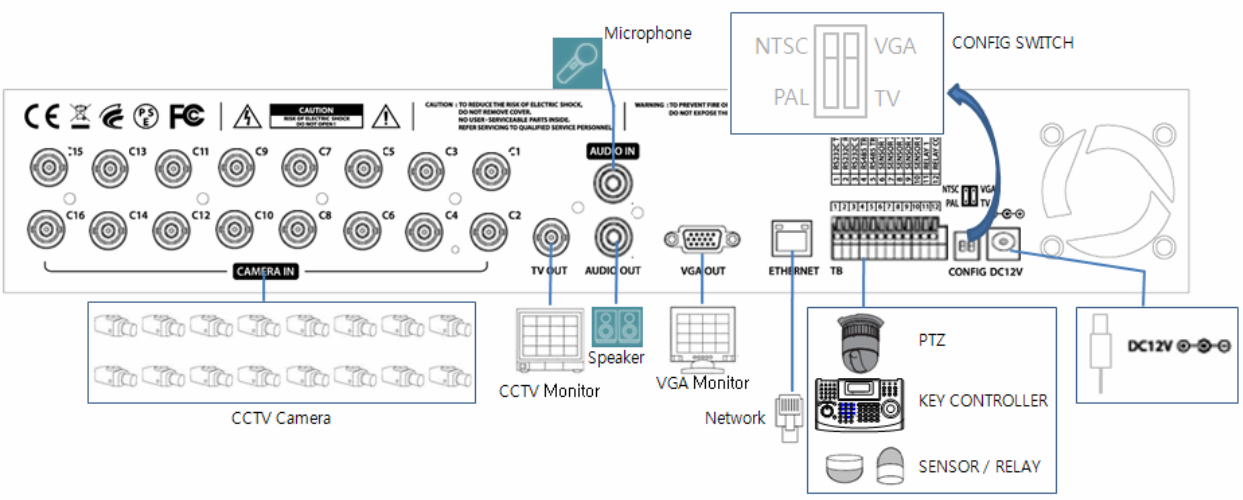


No.	Name	Feature	Format
1	**DC IN**	Power cable connection to the body	
2	**NTSC/PAL** **VGA/TV**	Select the video input format Select the video output	DA-2
3	**RS485** **DIO**	PTZ Camera Control Connection Sensor / Relay Connection	Terminal Block
4	**Ethernet**	Network Connection (ADSL, Cable Modem, Ethernet 10/100 Base-T)	RJ-45
5	**VGA-OUT**	VGA Monitor or LCD Monitor Connection	D-SUB 15P
6	**AUDIO IN**	Audio Input Connection(Line Only Input)	RCA
7	**AUDIO OUT**	Audio Output Connection(Line Only Output)	RCA
8	**TV**	CCTV Monitor Connection(Divided Screen)	BNC
9	**CAMERA IN**	Video Camera Connection	BNC

2-3. Installation and Connection



[Figure 2-1. VERTEX RTH-16 Basic Connection and Device Connection]



[Figure 2-2. H.16 Basic Connection and Device Connection]

2-3-1. Basic Connection

By referring to above **[Figure 2-1. VERTEX RTH-16** Basic Connection and Device Connection**] and [Figure 2-2. H.16 Basic Connection and Device Connection],** Connect the CCTV camera, CCTV monitor (or VGA monitor), and USB mouse to the DVR and set up CONFIG SWITCH.

	Connected Device	DVR Terminal
1	CCTV camera	Rear Video Input
2	CCTV monitor	Rear TV
3	VGA Monitor / LCD Monitor	Rear VGA-OUT
4	Mouse	VERTEX RTH-Series: Front USB / H.8 AND H.16-Series : Right Side USB
5	CONFIG SWITCH	Rear NTSC/PAL or VGA/TV Setup

※ Refer to a further description of CONFIG SWITCH below.

1. The input video type must be either NTSC or PAL; these two types must not be used together.
2. Select the input video format (NTSC/PAL) using the CONFIG switch on the rear side of the product.
3. Select the output monitor type (VGA/TV) using the CONFIG switch on the rear side of the product.
4. CONFIG SWITCH
   1) VGA Mode
      Resolution of VGA Monitor is **SXGA (**1280*1024) and CCTV Monitor output is not supported.
   2) TV Mode
      Resolution of VGA Monitor **SVGA (**800 * 600) and CCTV Monitor output is supported.

2-3-2. Connection of Other Devices

Caution

Difference between VERTEX RTH-Series and H.8 AND H.16-Series		
ITEM	**VERTEX RTH-Series**	**H.8 AND H.16-Series**
Loop Out	**OK**	**NO**
Spot Out	**OK**	**NO**
Audio Channel	**4 / 2 / 1**	**1 / 1 / 1**
Sensor Channel	**16 / 8 / 4**	**4 / 4 / 4**
Relay Channel	**[1ea NC/NO] [3ea TTL Out]**	**[1ea NC/NO]**

Connect the PTZ controller cable, audio input/output, network, and sensors as shown below.

	Connected Device	DVR Terminal
1	SPOT Monitor(CCTV Monitor)	Rear SPOT
2	Mike / Speaker	Rear Audio Input / Audio Output
3	LAN Cable	Rear Ethernet
4	PTZ Camera	Rear DIO (Digital Input/Output)
5	Sensor / Relay / TTL OUTPUT	Rear DIO (Digital Input/Output)
6	Key controller	Rear DIO (Digital Input/Output)

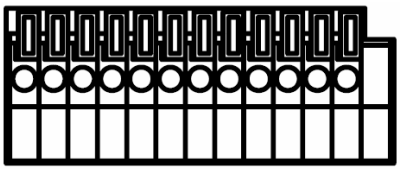
1) SPOT Monitor

Connect Spot Monitor to the rear SPOT terminal.

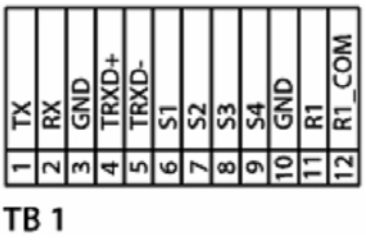
2) Audio Input/Output

Depending on models [VERTEX RTH-16 / VERTEX RTH-8 / VERTEX RTH-4 / H.8 AND H.16-Series], each of the models supports [4 / 2 / 1 / 1] line input and 1 line output.

3) Terminal Block



[Figure 2-3. Terminal Block TB1]



[Figure 2-4. Terminal Block TB1 Description]

Terminal Blocks in the rear of the product are for connections of RS-232 / PTZ / Sensor / Relay / TTL Connection. Terminal Blocks may not be available depending on the model.

4) PTZ Camera

Connect PTZ control cable; TRX+, TRX- and GND to Terminal Block(TB1);No.4 TRXD+, No.5 TRXD- and No.10 GND in the rear of DVR.

Caution	PTZ Camera may not be working properly if GND is not connected.

5) Sensor/Relay /TTL

Sensor and Relay are connected to Terminal Block(TB1) and Terminal Block(TB2) directly depending on the model.

(1) Sensor Connection

Connect Sensor to Terminal Block (TB1) and S1 ~ S16 of Terminal Block (TB2) depending on the model.

② Each input terminal may be connected regardless of the channel number.

	Sensor types include Normal Close (NC) and Normal Open (NO). For more information on setup by sensor type, refer to **{Menu} → {Setup} → {Recording} → {Event} → {Sensor}** **NC(Normal Close)** : Normally closed; opens when a signal is received **NO(Normal Open)** : Normally open; closes when a signal is received

(2) Relay Connection

Outputs alarm signals to external devices such as LED and siren by relaying them to these external devices.

Connect Relay to R1 of Terminal Block (TB1).

	Relay types include Normal Close (NC) and Normal Open (NO). For more information on setup by sensor type, refer to **{Menu} → {Setup} → {Recording} → {Alarm Output} → {Relay Output}.** **NC(Normal Close)** : Normally closed; opens when a signal is received **NO(Normal Open)** : Normally open; closes when a signal is received

(3) TTL Connection

This is for the external alarm devices such as an alarm and a siren that are supplied with voltage level LOW (0V) or HIGH (5V).

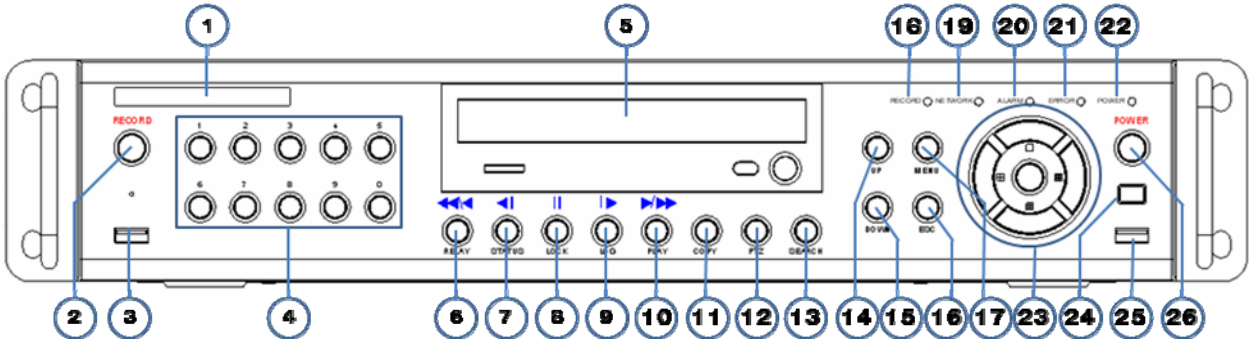
Connect TTL device to DO1 (TTL) / DO2 (TTL) / DO3 (TTL) of Terminal Block (TB2).

Caution	The external alarm device may require the power supply depending on its type.

Chapter 3. Operation and Setup Tools

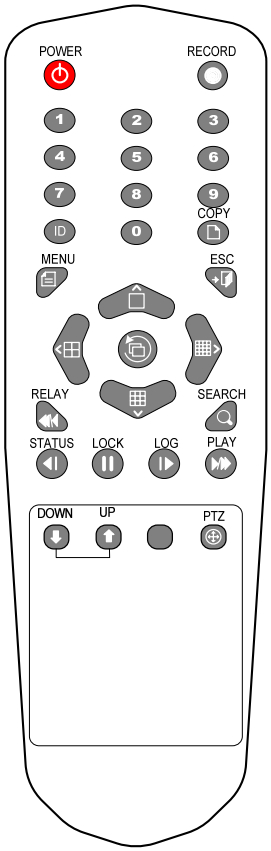
VERTEX RTH Series / H.8 AND H.16-Series is operated by Front Button, Remote Controller and Mouse.

3-1. VERTEX RTH-Series Front Button



No.	Name	Feature
1	**LABEL**	Brand Name and Model Name
2	**RECORD**	All channel Record/Stop
3	**USB**	Connection ports to USB mouse and memory stick
4	**Number**	System login and turn ON in other number input mode
5	**ODD**	CD-RW and DVD-RW
6	**Reverse Play / Fast Reverse RELAY**	Backward Playback/Rewind (in Playback mode) Relay Control (in Monitoring mode)
7	**Reverse Frame by Frame or TAB STATUS**	Backward Playback Frame by Frame (in Playback mode) View System Configuration/Change Display Configuration (in Monitoring mode)
8	**PAUSE** **LOCK**	Pause (in Playback mode) Lock (in Monitoring mode)
9	**Forward Frame by Frame or TAB LOG**	Playback Frame by Frame (in Playback mode) View System Log (in Monitoring mode)
10	**Forward Play /** **Fast Forward PLAY**	Playback/Fast Forward (in Playback mode) Play back (in Monitoring mode)
11	**COPY**	Copy Recorded Video
12	**PTZ**	Change Pan Tilt Zoom Mode
13	**SEARCH**	Search Recorded Images
14/15	**UP/DOWN**	Speed and Volume Up/Down
16	**ESC**	Exits the current menu or selects the upper menu
17	**MENU**	Various Modes
18	**RECORD LED**	Green LED turned on upon HDD operation
19	**NETWORK LED**	Green LED turned ON during remote access
20	**ALARM LED**	Red LED turned on upon the occurrence of event or motion
21	**ERROR LED**	Red LED turned on upon fan defect or recording interruption
22	**POWER LED**	Power On/Off
23	**SELECT**	Selects the category or executes automatic screen conversion
23	**MOVE & DISPLAY**	Moves from one category to another or changes the display mode
24	**IR Sensor**	Remote controller input part
25	**USB Port**	Connection port to the USB mouse and USB memory stick
26	**POWER**	Turn the system power ON or OFF

3-2. VERTEX RTH-Series Remote Controller



A, Basic Control Button

	POWER	Turns the system power ON or OFF
	RECORD	Records all channels or stops recording all channels
1 ~ 0	**NUMBER**	Enables input of numeric data
ID	**ID**	Sets up the remote controller ID

B. System operation and setup buttons

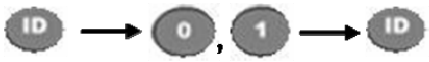
	MENU	Data, Schedule, System Set up
	ESC	Exits the current menu or selects the upper menu
	SEARCH	Searches recorded images
	SELECT	Selects the category or executes automatic screen conversion
	COPY	Copy Recorded Video
	PTZ	Shifts to PTZ camera control mode
	MOVE	Moves from one category to another or changes the display mode
	UP/ DOWN	Speed and Volume Control

C. Search Button **(Play mode)**

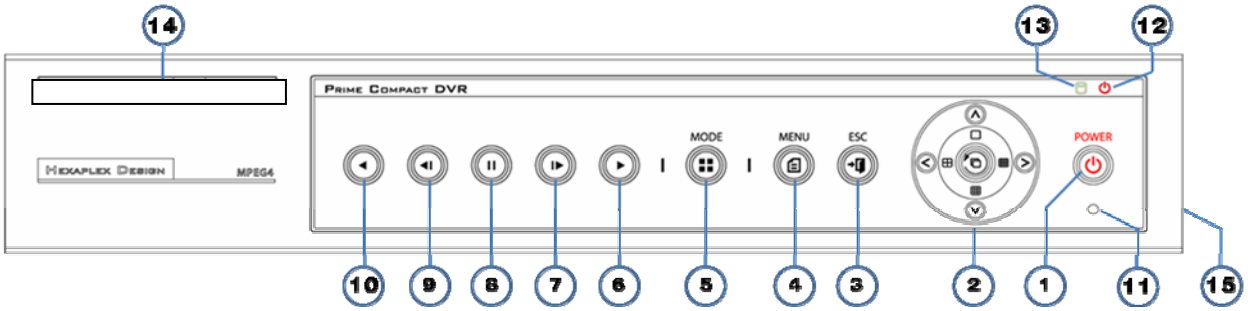
PLAY	**Play / Fast Forward**	Play/Fast-forward
LOG	**Frame by Frame**	Play frame by frame
LOCK	**Pause**	Pause
STATUS	**Reverse Frame by Frame**	Reverse play frame by frame
RELAY	**Reverse Play / Fast Reverse**	Reverse play/ Rewind

D. Buttons for other features **(Monitoring mode)**

PLAY	**PLAY**	Plays the recorded images
LOG	**LOG**	Enables viewing the system log list
LOCK	**LOCK**	Locking the system
STATUS	**STATUS**	Views system information and changes the display setup
RELAY	**RELAY**	View Relay Status and Manual Operation

	※ Setting up the remote controller ID
	Example) When the remote controller ID is set to 1  Press the **[ID]** button, enter a two-digit remote controller ID, and press the **[ID]** button again. To control all DVRs with different IDs, set the remote controller ID to 999.

3-3. H.8 AND H.16-Series Front Button



No.	Name	Feature
1	**POWER**	System Power On / Off
2	**MOVE & DISPLAY**	Moves from one category to another or changes the display mode
3	**ESC**	Exits the current menu or selects the upper menu
4	**MENU**	Various modes
5	**MODE**	Screen mode menu
6	**PLAY**	
7	**Frame by Frame**	
8	**PAUSE**	Pause during playback
9	**Reverse Frame by Frame**	
10	**Reverse Play**	
11	**IR Sensor**	Sensor for remote controller
12	**POWER LED**	LED for Power status
13	**RECORD LED**	Green LED during Recording
14	**LABEL**	Brand Name and Model Name
15	**USB**	**[Side]** USB mouse, memory stick for backup and upgrade

3-4. Remote Controller for H.8 AND H.16-Series

A. Basic Control Button

	POWER	System Power ON / OFF
ESC	**ESC**	Exits the current Menu Or selects the upper menu
MENU	**MENU**	Data, Schedule, System setup
MODE	**MODE**	Screen Mode Menu
	SELECT	Selects the category or executes automatic screen conversion
	MOVE	Moves from one category to another or changes the display mode

B. Search Button (Playback Mode)

	Reverse Play
	Play
	Reverse Frame by Frame
	Pause
	Frame by Frame

3-5. Mouse

The USB mouse can be used to operate the system. The mouse pointer as below photo will be shown if a mouse is connected to USB terminal at front panel. Front for VERTEX RTH-Series / Right Side for H.8 AND H.16-Series.

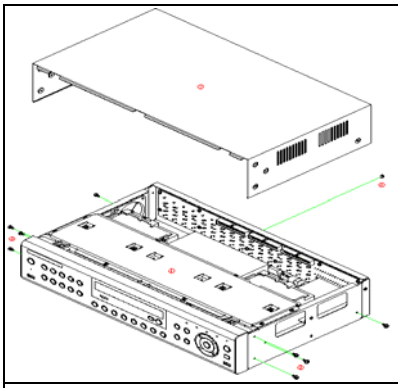
	※ Mouse Control supports features are shown below.	
	Click on the right button	Monitoring Mode / Move from Play Mode to Monitoring Menu / Pop up or remove Play Menu Show sub-folder of the certain Menu window.
	Click on the left button	Select Menu.
	Double click on the left button	Select Menu.
	Click and drag the left button	Move a certain window.

Chapter 4. DVR Operation Setup

4-1. VERTEX RTH-Series Storage Installation

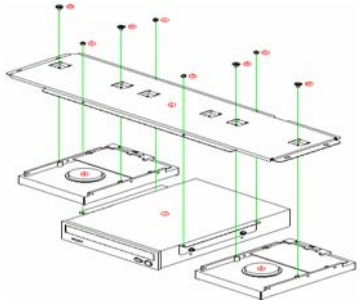
※ Recommended HDD Specification

Type	Size	Capacity	Buffer	RPM
SATA I, II	3.5" 1, 2 Flat	Up to 1.5TB	over 8MB	over 7200



1) Using a screw driver, unscrew and take off the top case of the product.

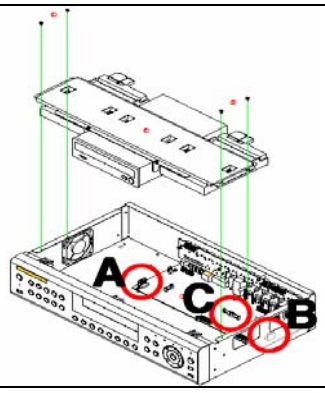
Caution	1) Normal termination of the system and fully unplugged power code are required before conducting HDD installation. 2) Touch a grounded metal substance or ground yourself before installing HDD in order to reduce static electricity. Static electricity may cause a malfunction of the product. 3) After installing HDD, Do not connect to power supply with the top case opened. The top case must be covered before usage.



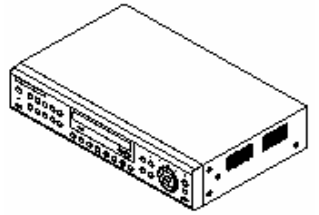
2) Unscrew and separate the HDD bay.

3) Align screw holes and screw and fix additional HDD onto HDD bay.

4) Connect the power cable and data cable to HDD.



5) The main board of the product provides two power connection; Left**(A)**/Right**(B)**. Connect the power cable of HDD to **(A)/(B)**.
6) Connect the data cable of HDD to the main board data cable connecter**(C)**.

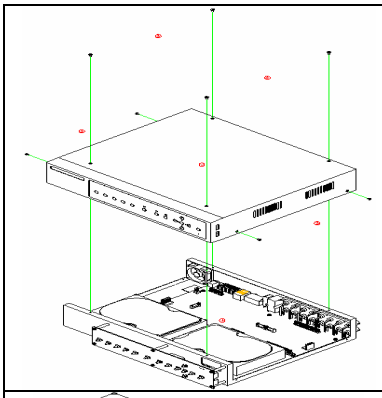


7) Reassemble the top case by reversing 1) to finalizing HDD installation.

4-2. H.8 AND H.16-Series Storage Installation

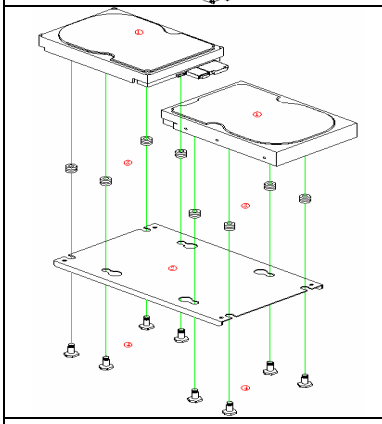
※ Recommended HDD Specification

Type	Size	Capacity	Buffer	RPM
SATA I, II	3.5" 1, 2 Flat	Up to 1.5TB	over 8MB	over 7200



1) Using a screw driver, unscrew and take off the top case of the product.

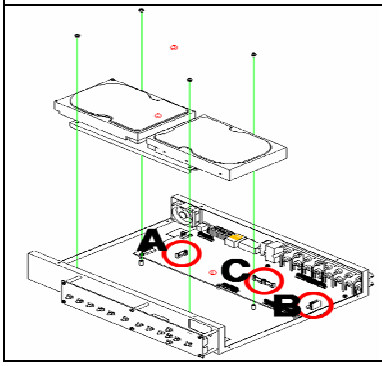
Caution	1) Normal termination of the system and fully unplugged power code are required before conducting HDD installation. 2) Touch a grounded metal substance or ground yourself before installing HDD in order to reduce static electricity. Static electricity may cause a malfunction of the product. 3) After installing HDD, Do not connect to power supply with the top case opened. The top case must be covered before usage.



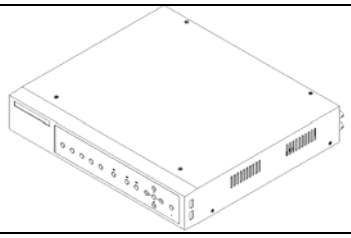
2) Unscrew and separate the HDD bay.

3) Align screw holes and screw and fix additional HDD onto HDD bay.

4) Connect the power cable and data cable to HDD.



5) The main board of the product provides two power connection; Left**(A)**/Right**(B)**. Connect the power cable of HDD to **(A)/(B)**.
6) Connect the data cable of HDD to the main board data cable connecter**(C)**.

	7) Reassemble the top case by reversing 1) to finalizing HDD installation.

4-3. Power ON.

Check the adapter (12VDC/3.5A) and connect the power. Booting will be initiated by pressing the power button in the front panel. Booting is progressed step by step by VGA outputting or a color bar test screen for TV outputting, Live screen and a clock.
Menu widow pops up by clicking the right button of the mouse or pressing [MENU] button in the front panel as shown below.

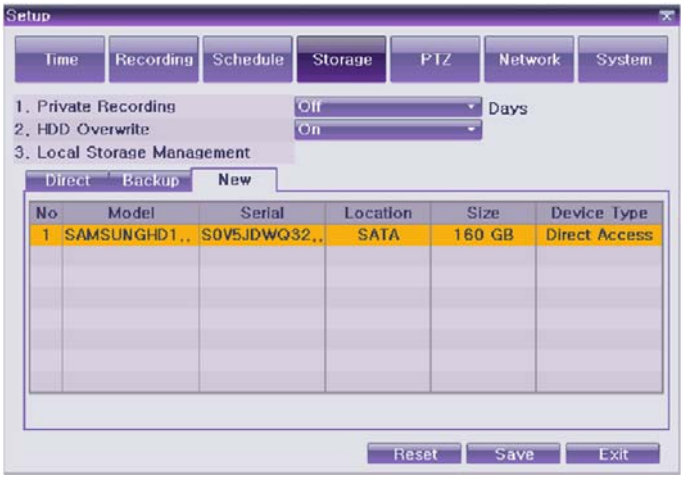
[Figure 4-5. Menu Window]

ID and Password are required for a initial installation. Default ID and Password are shown below.
[Local Admin : 00000]
[User1 : 1111111] [User2 : 2222222] [User3 : 3333333] [User4 : 4444444]

4-4. Storage Setup

Select {Menu} → {Setup} → {Storage Device}. As shown below, newly installed HDD is shown at **{NEW}** tab.

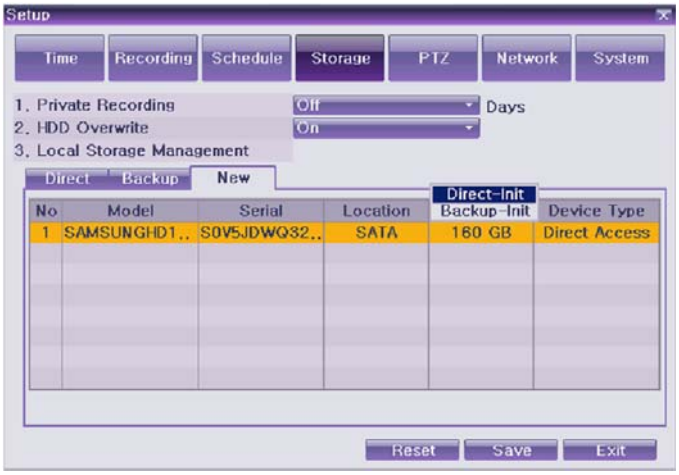
Indication of "**{ }**" refers to one provision of the menu. Indication of "**→**" refers to a sub-provision. Example> **{Menu} → {Setup}** : go to Setup that is a sub-provision of Menu.



[Figure 4-6. Storage Device Window]

{New} tab is a newly introduced manager in MM series/SM-Series and it manages all storage devices. All newly recognized devices are managed and allocated as a saving or backup storage in **{New}**.

Move focus onto **{NEW}** tab using the arrow keys and select.
Select Hard Disk.



[Figure 4-7. Storage Device New Tab Window]

Direct Initialize	Changes the selected storage into a dedicated direct storage.
Backup Initialize	Changes the selected storage into a backup storage.
Caution	{New} At least, one storage shall be selected as a dedicated storage. Otherwise, the data cannot be stored in real time.

④ Select {Direct-Init} and follow {Direct-Init} procedure.

{Direct-Init} procedure may take time.

When it is completed, HDD is removed from **{New}** tab and shifted to **{Direct} tab**.
Move to **{Direct}** tab and select.
As shown below, it is indicated as **[ACTIVE/HEAL..] in {Status(SW/HW)}**, and HDD setup is completed.

[Figure 4-8. Menu Window]

More detail description for HDD and Storage Device; check **[6-4 Storage Device]**.

4-5. Recording Setup

Select **{Menu}** → **{Setup}** → **{Recording}**.
Setup for [Recording Resolution]/[Recording Quality]/[Mode]/[Recording Frame]/[Audio]/[Motion Detection]/[Sensor Detection]/[Event] and Alarm Output are available.

The initial recording setup is **[Recording Resolution: CIF] [Recording Quality: High] [Mode: Continuous]**. An image of the connected cameras is recorded with above setting. For more detail, check **[6-2 Recording]**.

4-6. Date/Time Setup

Select **{Menu} → {Setup} → {Time}**.
Set up [Time Sever]/[Date and Time]/[Standard Time Zone]

4-7. Camera / TV Setup

Select **{Menu} → {Miscellaneous} → {Camera/TV Setting}.**
Set up for [Brightness/Contrast/Color/Hue/Camera Adjustment/TV OUT Adjustment] are available.

4-8. Screen View Setup and Others Setup

Select and set up **{Menu} → {Miscellaneous} → {Display Mode}.**
Select and set up **{Menu} → {Miscellaneous} → {Display Setting}.**
Select and set up **{Menu} → {Miscellaneous} → {Channel Grouping}.**
Select and set up **{Menu} →{Setup} → {System}.**

4-9. External Device Setup

Set up External Device. For more information, check **[5-4 Audio Recording and Playback] [5-6 Spot Control] [5-7 Relay Out] [[6-5 PTZ] [6-6 Network] [6-2-5 Alarm Output] [6-7-10 Alarm] [6-7-11 Alarm Time Setup].**

4-10. Recording View

Select **{Menu} → {Search} → {Calendar Search/Last Hour Playback/First Hour Playback/Move to Last Playback}.**
For more information, check **[5-8 Search] [5-9 Calendar Search] [5-10 Playback]**.

4-11. Backup

Backup is available in Monitoring, Search, Log and Playback Mode.
For more information, check **[5-13 Backup]**.

4-12. DVR Information View

Move to {Menu} → {Miscellaneous} → {DVR Info.}.

Caution	**Detail information for product functions are described from Chapter 5.**

Chapter 5. System Operation

5-1. Starting and Exiting the System

5-1-1. Starting the System

With the power connected, press the Power button.
After the system is booted, images of all connected channels will be displayed.

5-1-2. Exiting the System

	※ The default password for the local administrator is “00000.” ※ To change the password, select **{Main Setup}** → **{System}** → **{Local Administrator’s Password}**.

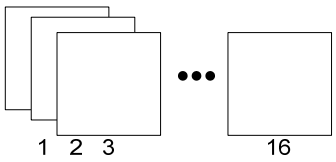
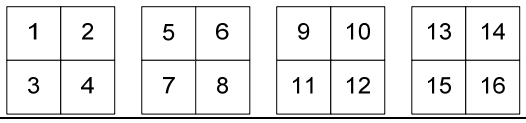
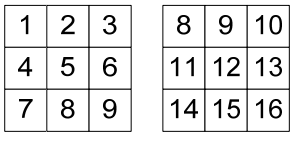
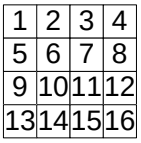
Press the Power button on the remote controller.
On the password input screen, enter a new password using the numeric buttons and the arrow keys.
After authentication is completed, the alarm will sound for 20 seconds, and the system will be terminated.

5-2. Monitoring

- **Various Screen Division and Auto Sequence**
- **Channel Grouping**
- **Spot**
- **Menu Controlling in Monitoring Mode**

After the system is booted, images will be displayed on a screen divided into [16/8/4] according to its setting. In case of 16 channels DVR, the screen can be divided into 1, 4, 9, and 16 sub-screens. Auto-sequencing from is available in each mode.

5-2-1. Screen Division and Auto Sequence

Full Screen (16 groups)	
Use the Full Screen mode. To view a certain channel, select the desired channel using the numeric buttons.	
4Sub-Screen (4 groups)	
Use the 4 Sub-Screen button.	
9Sub-Screen (2 groups)	
Use the 9 Sub-Screen button.	
16Sub-Screen(1 group)	
Use the 16 Sub-Screen button.	

※ The user can view an image on full screen by double-clicking the 4/9/16 Sub-Screen mode. Double-click any part of the screen to return to the previous mode.
※ Auto Sequence Auto Sequence is to rotate images at an interval of the certain time in 1/4/9 Sub-Screen Mode. It changes to Auto Sequence Mode if you select **{Menu} → {Miscellaneous} → {Display Mode}→{Sequence}** in 1/4/9 Sub-Screen Mode. Using the Up/Down button, the user can select the interval from 1 second to 10 seconds (to set the interval, however, multiple cameras should be connected).

5-2-2. Channel Grouping

Channel Grouping is to change the image location in the screen between channels.

On the real-time monitoring screen, select **{Menu} → {Miscellaneous} → {Channel Grouping}**.
On the monitoring screen, go to the channel selection window and select the channel to be changed in the group. Then the selection window pops up.
On the selection window, select a channel using the arrow keys and the Select button.
The Image location of the each channel is changed.

	※ Group Setup is not supported for the 1-split mode. ※ The user can change the channel location in the group using the mouse. ※ Changing the screen division mode causes other division modes to be changed as well.

5-2-3. Spot (Only for VERTEX RTH series)

Spot is to output a channel that is set with a certain function. Spot has an independent monitor and output and only full screen mode is available.

Event Spot

Event Spot is to show a channel quickly that is set with the Event function in case events (sensor and motion) occur. The event check interval is one second. If events are detected in many channels, it shows a channel with the last event. Move to **{Menu} → {Setup} → {Recording} → {Alarm Output} → {Event Spot}**.

Manual Spot

User can designate a spot channel manually. Move to **{Menu} → {Misc. Control} → {Spot}** and select a channel.

Sequence Spot

User can select more than one channel in Manual Spot and have a sequential image through Spot. Move to **{Menu} → {Misc. Control} → {Spot} → {Sequence}**.

5-2-4. Menu in Monitoring Mode

User can control all functions available in Monitoring Mode in **{Menu}**.

Press the Menu or right-click mouse button. The **{Menu}** will then appear.
Select the desired item using the arrow keys or mouse.
Press the ESC button or right-click mouse button to hide the menu.

5-3. System Login

5-3-1. User Account and Authorization

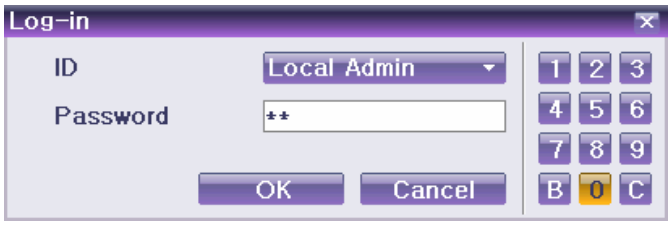
System users are divided into local administrators and general users.
The local system administrator can use all functions.

Local Admin	The local administrator can use all functions: System Power On/Off, Setup, Monitoring, and Playback (remote access is not available, however).
User	Up to four users are allowed. Each user can access the functions depending on the given authorities. For Authorization Setup, Move to **{Monitoring Menu} → {Setup} → {System}→ {User Registration}**.

※ Functions available for Authorization Setup	
Network Live	Enables viewing real-time images upon network access
Playback	Enables viewing the Recorded Screen
Copy (Download)	Enables copying and downloading files from the network
PTZ Control	PTZ camera control
Main / Additional Setup	Data Setup, Recording Schedule, System, Storage, NTP, Advanced Setup, PTZ Camera, Network, Camera/TV Setup
Network Upgrade	Remote network upgrade
View Hidden Channels on Network	Enables viewing hidden channels on the network

5-3-2. Login

For security purpose, user must log in first to use **{Monitoring Menu}.**



[Figure 4-9. Login Window]

On the real-time monitoring window, select **{Menu}** → **{Login}**. The login window will then appear as shown in Figure 4-9.
Enter the password or select the cancel.

5-3-3. Logout

After logging out, the user cannot use **{Menu}.**

On the real-time monitoring screen, select **{Menu}** → **{Logout}**.

5-4. Audio Recording and Playback

⚠	Each model; VERTEX RTH-16/VERTEX RTH-8/VERTEX RTH-412 supports 4/2/1 audio channels.
VERTEX RTH-16	Audio recording for video channel 1~4 is available.
VERTEX RTH-8	Audio recording for video channel 1~2 is available.
VERTEX RTH-4	Audio recording for video channel 1 is available.
H.8 AND H.16-Series	Audio recording for video channel 1 is available.

5-4-1. Audio Recording Setup

On the real-time monitoring screen, select **{Menu}** → **{Setup}**→**{Recording}**.
Select **{Recording}** → **{Audio}** using the arrow keys and the Select button.
Set up the audio.

5-4-2. Audio Live

On the real-time monitoring screen, select **{Menu}** → **{Miscellaneous}** → **{Misc. Control}**.
Select the audio channel in **{Audio}** tab.

5-5. System Information View and Display Setup Change

Audio/Recording Status/Channel Title/Connection Indicator/Time are displayed as shown below.

[Figure 4-10. Recording Status Window]

※ Functions available for Authorization Setup			
	Video is not connected or Video is covert.		
	Audio is set activated.		
	Audio is set silent.		
Channel Title	Channel title		
Time	Current time		
Recording Mode	**Green**		Continuous Recording
	Red		Motion Recording
	Blue		Sensor Recording
No Signal	Camera has been disconnected.		

5-5-1. System Information

On the real-time monitoring screen, select {**Menu**} → {**Miscellaneous**}→{**DVR Info.**}.
Product information mode will then be displayed as shown below.

[Figure 4-11. Product Information Window]

	ID is an identification(1~99, 255) of the product. The remote controller ID must match the identification to control DVR system.

5-5-2. Camera Selection for Screen Setup

On the real-time monitoring screen, select **{Menu} → {Miscellaneous} → {Camera/TV Setting}**.
Select a camera for Screen Setup. If you tick on All Channels, you can set up screen over all channels.

[Figure 4-12. Camera/TV Setup Window]

5-5-3. Screen Brightness/Contrast/Hue/Saturation Adjustment

On the real-time monitoring screen, select **{Menu} → {Miscellaneous} → {Camera/TV Setting} →{Brightness/Contrast/Hue/Saturation}**.
Select a channel to be adjusted.
Adjust the brightness of the selected channel using the arrow keys.
Adjust the other channels by repeating ② and ③.

5-5-4. Camera Adjustment

You can adjust a position of each camera by Up/Down/Left/Right.

On the real-time monitoring screen, select **{Menu} → {Miscellaneous} → {Camera/TV Setting} →{Camera Adjustment}**.
Select a camera to be adjusted.
Adjust the position of the selected camera using the arrow keys.
Adjust the other camera by repeating ② and ③

> Moving the camera, down, right, or left excessively may cause black or gray areas to appear on the screen. The level at which such condition does not occur is the proper control range for the camera.

5-5-5. TV Adjustment

TV Adjustment is to move the TV OUT screen Up/Down/Left/Right.
On the real-time monitoring screen, select **{Menu} →{Miscellaneous}→ {Camera/TV Setting} → {TV OUT Adjustment}**.
Adjust the CCTV monitor screen up/down or Right/Left using the arrow keys.

> Moving the monitor up, down, right, or left excessively may cause black or gray areas to appear on the screen. The level at which such condition does not occur is the proper control range for the monitor.

5-5-6. Camera Title Shown/Hidden

On the real-time monitoring screen, select **{Menu} → {Miscellaneous} → {Display Setting} → {Camera Title}**.
Select the On/Off status using the arrow keys and the Select button.

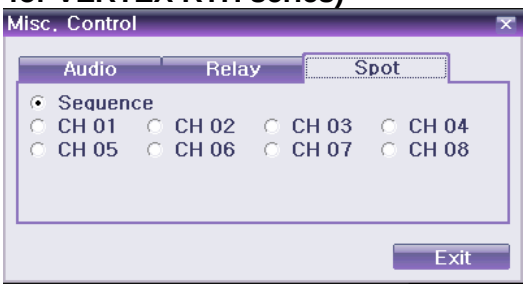
5-5-7. Screen Border Adjustment

On the real-time monitoring screen, select **{Menu} → {Miscellaneous} → {Display Setting} → {Border}**.
Select the desired item using the arrow keys and the Select button.
After assigning the setup value per field, press the [ESC] button to exit the Border Line setup mode.

[Figure 4-13. Screen Setup Window]

Border setting fields		
Field	**Setup Value**	**Description**
Mode setup	On	Display the border for each channel screen in varying modes.
	Off	Hide the border for each channel screen in varying modes.
Type	Internal	Hide the external border line.
	All	Display all border lines.
Width	2, 4	Set the width of the border.
Color	Black, White, Red, Green, Blue	Set the color of the border.

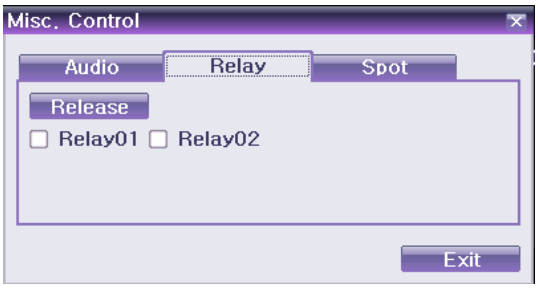
5-6. Spot Control (Only for VERTEX RTH series)



[Figure 4-14. Spot Control Window]

On the real-time monitoring screen, select **{Menu} → {Miscellaneous} → {Misc. Control} → {Spot}**. Select a channel or Sequence, and then the selected channel screen will be displayed.

5-7. Relay Out



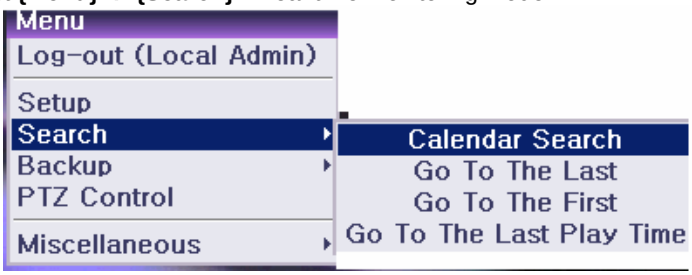
[Figure 4-15. Relay Control Window]

On the real-time monitoring screen, select **{Menu} → {Miscellaneous} → {Misc. Control} →{Relay}** Selecting a relay channel enables outputting and canceling the relay.

5-8. Search

5-8-1. Search Mode

For Search mode, select **{Menu} → {Search}** in real-time monitoring mode.



[Figure 4-16. Playback Menu Window]

5-8-2. Playback Menu

Four Playback are available..

A. Calendar Search

Calendar Search allows the user search and play back by [Year/Month/Day/Hour/Minute],[Multi-Channel/Multi-Time/Multi-Day]and [Motion/Sensor/Audio].
Selecting Calendar Search moves to the search window.

B. Go To The Last

The user can search and play back the last recorded data by Multi-Channel Mode. Selecting Go To The Last shifts to the playback screen.

C. Go To The First

The user can search and play back the first recorded data by Multi-Channel Mode. Selecting Go To The First shifts to the playback screen.

D. Go to The Last Played Time

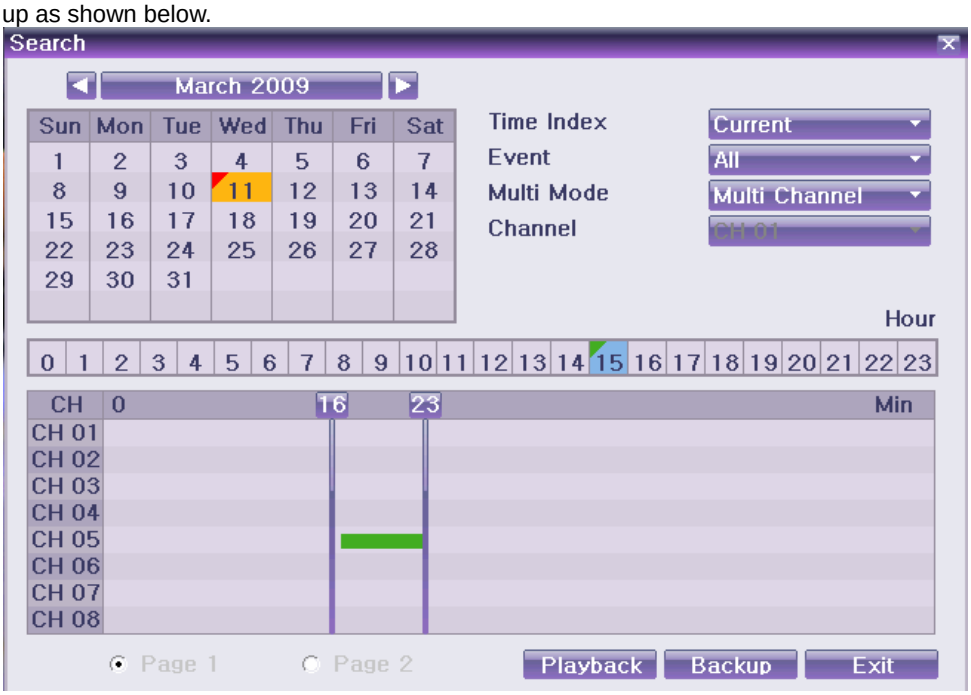
The user can play back from the last played time by Multi-Channel Mode.

⚠	※ Go To The First and Go To The Last are only available in **{Multi-Channel}**

5-9. Calendar Search

5-9-1. Search Mode

On the real-time monitoring screen, select {**Menu**} → {**Search**} → {**Calendar Search**} and then a searching window pops up as shown below.



[Figure 4-17. Search Window]

5-9-2. Year/Month/Day Selection

Select the desired [Year/Month/Day]. The color of the icon at the top-left day square in the calendar indicates the recording status.

5-9-3. Directory Count

1) Every time when the user changes the time at {Menu} → {Setup} → {Time} → {Date and Time} tab, a new folder(Directory) is created and files saved in the folder before the time change is indicated sky-blue in the file list.
2) Selecting a file in blue-sky leads to a selection window popup and the user can select a file in different folder (before time change).

	※ Searching by the file list is only available in Multi-Channel Search.
Current	A recorded image file with the current set time
Old_Number	A recorded image files before the time change

5-9-4. Event

Event is to search the data by the events. Select [All/Motion/Sensor].

5-9-5. Multi-Channel Search

Multi-Channel Search is to play the recorded image of the different channel over a certain designated time.

Using the arrow keys and the Select button, select the desired Year/Month/Day in the activated calendar window.
On the calendar window, select the desired search date. The recorded one-hour video of each channel is then displayed in a bar graph.

	Green	Continuous recording is in progress.
	Red	Motion recording is in progress.
	Blue	Sensor recording is in progress.
	Sky-Blue	A image that recorded before the time change

Move the time line to a specific time point using the arrow keys or the numeric buttons and press the Search button.
Selecting the time causes the recorded video for each channel to be displayed as a bar graph in minute units.
Move the time line to a certain time point using the arrow keys and the numeric buttons and press the Select button. Playback will then start from the specified time point.

5-9-6. Multi-Time Search

The user can play back the video contents of a certain channel recorded in different time zones.
Multi-time data can be searched in Multi-time Search mode.

The user can search data by date as in the Multi-Channel Search mode.
Time zones and channels may be viewed by selecting the desired date.
Select the start time and the channel using the arrow keys.
The hourly recorded video of the selected channel will then be displayed as a bar graph in minute units.
Move the time line using the arrow keys and the numeric buttons and specify the time. Afterward, press the Start button and play back the contents.

※ A different time zone means continuous 16 hours.

5-9-7. Multi-Day Search

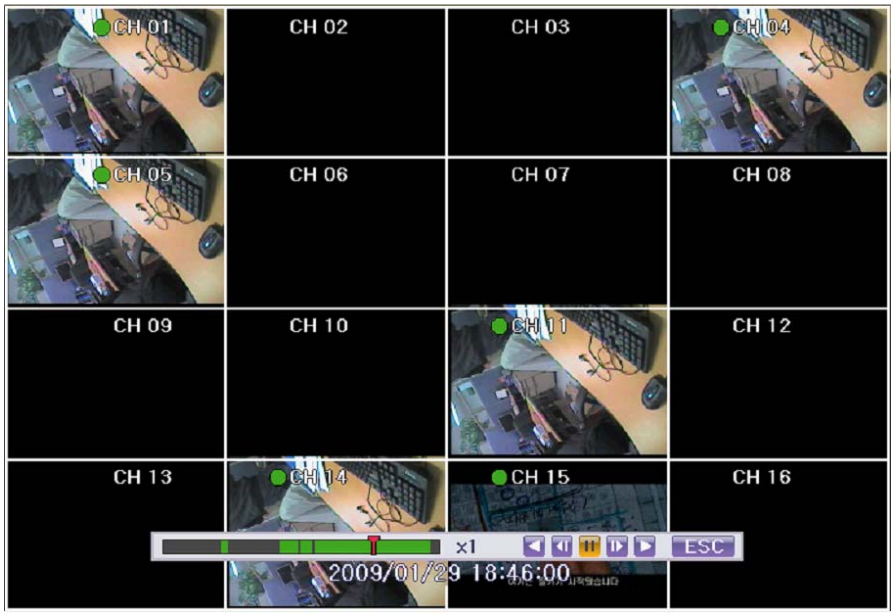
The user can play back the video contents of a certain channel recorded in different days.
Multi-time data can be searched in Multi-Day Search mode.
Using the arrow keys and the Select button, select the desired Year/Month/Day in the activated calendar window.
The date list and the recording status from the date the user selects, are viewed by selecting the desired date.
Select the start time and the channel using the arrow keys.
The recorded video of the selected channel will then be displayed as a bar graph in minute units.
Move the time line using the arrow keys and the numeric buttons and specify the time. Afterward, press the Start button and play back the contents.

※ A different time zone means continuous 16 hours.

5-10. Playback

There are five routes to play the recorded image.

- Playback in Calendar Search
  Select {Playback} in {Menu} → {Search} → {Calendar Search} → {Search}.
- Playback in Go To The Last
  Select **{Menu} → {Search} → {Go to The Last}**.
- Playback in Go To The First
  Select **{Menu} → {Search} → {Go To The First}**.
- Playback in The Last Played Time
  Select **{Menu} → {Search} → {The Last Played Time}**.
- Playback in Log View
  After selecting **{Menu} → {Miscellaneous} → {Log Viewer},** select or double-click the time line listed to play.



[Figure 4-18. Playback Screen]

5-10-1. Playback and Playback Speed Control

In Playback mode, the user can play back video contents using the button functions below.
After the data is played to the end, the data of the next time zone will be automatically searched and played (this function is possible only in Multi-channel Playback mode; both backward playback and forward playback are possible).

Pressing buttons, the user can adjust the playback speed by(x 1) / (x 2) / (x 4) / (x 30).

[Figure 4-19. Playback Status and Control Window]

Description of the Search Buttons		
Button	**Name**	**Features**
	Forward Play / Fast Forward	Press one time - Playback forward (x 1) Press two times - Fast forward (x 2) Press three times - Fast forward (x 4) Press four times - Fast forward (x 30) Pressing one more time in x30 leads to x1 back.
	Forward Frame by Frame	Playback frame-by-frame Pause
	Pause	Pause
	Reverse Frame by Frame	Reverse playback frame by frame Pause
	Reverse Play / Fast Reverse	Press one time - Playback reverse (x 1) Press two times - Fast reverse (x 2) Press three times - Fast reverse (x 4) Press four times - Fast reverse (x 30) Pressing one more time in x30 leads to x1 back.
	ESC	Exit to Playback Mode

	Status bar indicating information of the hourly recorded image data.

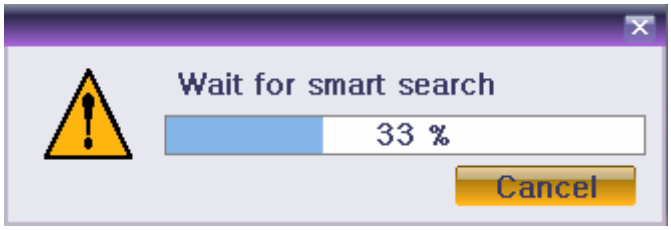
Selecting the right-mouse button or menu button in Playback Mode pops up the **{Playback Menu}**
Items in {Playback Menu} is shown below.

[Figure 4-20. Playback Menu]

5-10-2. Smart Search

This function is used to search an image with the object movement at a specific zone fast. Searching by each channel is available.

Move to Smart Search and select the desired channel.
Then, it shifts to 1 channel mode and the searching starts with a window shown below.



[Figure 4-21. Smart Search Motion Detection Window]

It may take time during the searching.
Start the playback after the searching.

5-10-3. Calendar Search

Move to Calendar Search in **{Menu}** → **{Search}** → **{Calendar Search}**

5-10-4. Multi Time

Multi-Time is to play the recorded image of the different time over a certain designated channel.
The lineup of the recorded image of the different time is the most recent-bottom.

5-10-5. Multi Day

Multi-Day is to play the recorded image of the different day over a certain designated channel.
The lineup of the recorded image of the different time is the most recent-bottom.

5-10-6. Multi Channel

Multi-Channel is to play the recorded image of the different channel over a certain designated time.

5-10-7. Event

Event is to play the recorded image with [All/Motion/Sensor/Audio]

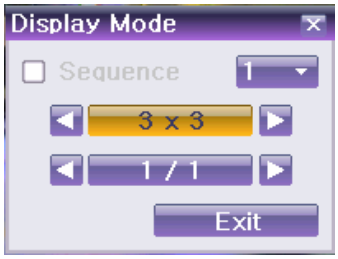
5-10-8. Backup

Save the backup image and captured image into [CD/External Storage.]

Backup	Save the backup image data into [CD/External Storage].
Snapshot	Capture and save an image of screen being monitored.

5-10-9. Display Mode

The user can divide the screen in Playback Mode as same as in Monitoring Mode.
Select Screen Mode and Screen Mode window as shown below pops up.



[Figure 4-22. Display Mode]

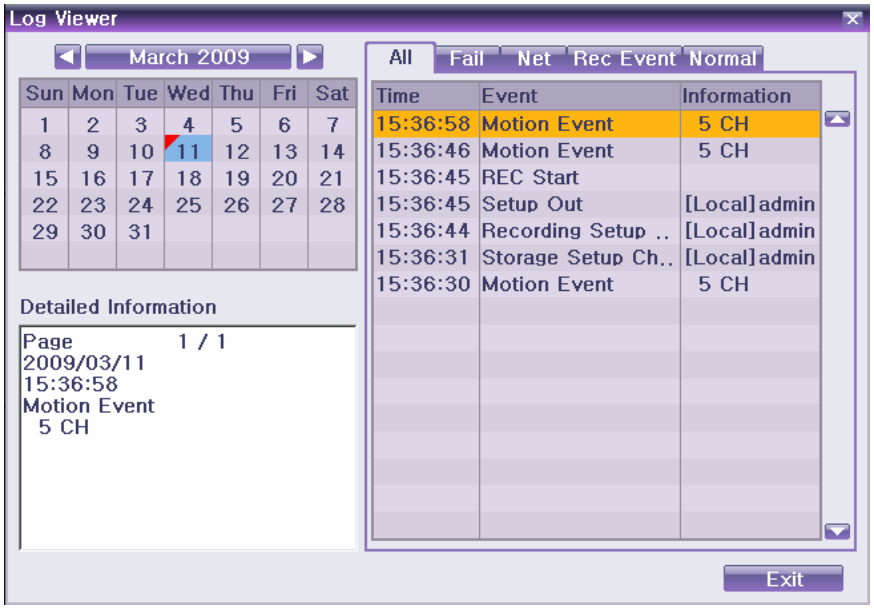
Select [1/4/9/16 Mode]

5-10-10. Status Bar

Select Activation or Deactivation below Playback Mode [Figure 4-19. Playback Status and Control Window].

5-11. Log Viewer

VERTEX RTH series DVR records all Log information over the system operation including Power on/off, System Setup and Network Access. Move to **{Menu} → {Miscellaneous} → {Log Viewer**} to see the logs.


Log Viewer
March 2009
Sun Mon Tue Wed Thu Fri Sat
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
Detailed Information
Page 1 / 1
2009/03/11
15:36:58
Motion Event
5 CH
All Fail Net Rec Event Normal
Time Event Information
15:36:58 Motion Event 5 CH
15:36:46 Motion Event 5 CH
15:36:45 REC Start
15:36:45 Setup Out [Local]admin
15:36:44 Recording Setup .. [Local]admin
15:36:31 Storage Setup Ch.. [Local]admin
15:36:30 Motion Event 5 CH
Exit

[Figure 4-23. Log Viewer]

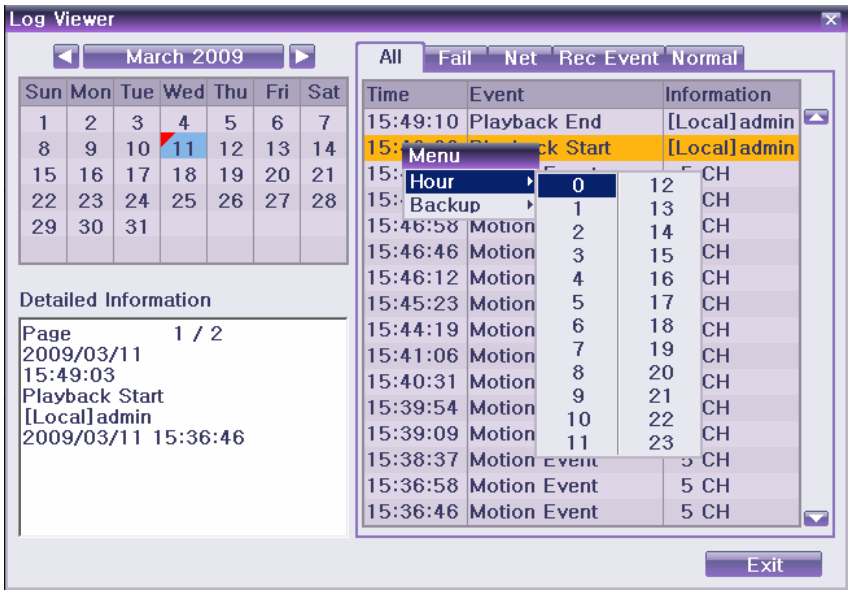
5-11-1. Log Type

General	Logs related to power ON/OFF, file copy/backup failure, setup start/end, playback, and other basic system operations.
Recording Event	Logs related to recording, e.g., motion detection and sensor detection
Network	Logs related to network operations e.g., network login, network logout, and network live
Fail	Logs related to system operation failures, e.g., signal loss and network connection failure
All	Logs related to all system operations

5-11-2. System Log Viewer

In real-time monitoring mode, **{Menu} → {Miscellaneous} → {Log Viewer},** then, Log List Window pops up.
On the activated calendar window, Select the desired date (year/month/date) using the arrow keys and the

Select button.
The user can check the time and the log type using the arrow keys in the log list.
Use the Up/Down button to check the logs by time and type on each page.
The user can shift the focus to a certain time zone for playing the certain time (playback will start from the time point when logs are saved).
Click the right-mouse button or select {Menu} button in the front panel and select {Hour} to move the desired log time zone.



[Figure 4-24. Move to the log list of the certain time zone]

	Time Changed Log Data View The stored data folder is updated each time the user changes the time. A blue triangular icon is displayed on the date each time a change is made in the date on the calendar window. Otherwise, a red triangular icon is displayed on the unchanged date. To view the log details, select the desired date with a red icon. Selecting a date with a blue icon causes the changed date list to appear.

5-12. Recording

5-12-1. Recording Types

The VERTEX RTH, H.8 AND H.16 series supports various recording types as shown below.

Recording Type	Description
Automatic	Set the event recording frame and general recording frame separately. Depending on the set value, select the recording type automatically and proceed with the recording. When motion or sensor is detected, the event recording frame will be selected. Otherwise, the general recording frame will be selected.
Continuous	Continuous recording will be done based on the general frame value.
Motion	When motion is detected, recording will be done based on the event frame value.
Sensor	When input signal from an external sensor is generated, recording will be done based on the event frame value.

5-12-2. Recording Setup

Go to **{Menu} → {Setup} → {Recording}** for Recording Setup. For more information, move to **{Menu} → {Setup} → {Recording}} → {Recording}**

5-12-3. Recording Status View

A. Recording Status by Color

	Green	Continuous recording is in progress.
	Red	Motion recording is in progress.
	Blue	Sensor recording is in progress.

B. Starting and Stopping Record All

In real-time monitoring mode, the user can start or stop the recording of all channels by selecting **{Menu} → {Miscellaneous} → {Record On/Off}**

C. Stopping Record All

In real-time monitoring mode, select **{Menu} → {Miscellaneous} → {Record On/Off}**
Enter the password of the local system administrator.
On the recording stop confirmation window, select the Yes button.
Any channel recording in progress will then stop, and the corresponding status will be displayed on the recording status window.

D. Starting Record All

In real-time monitoring mode, select **{Menu} → {Miscellaneous} →{Record On/Off}**
On the login window, enter the password of the local system administrator.
The recording of all channels will then start based on the previous setting, and the recording status will be displayed.

5-13. Backup

To back up data, the PC shall be equipped with CD and DVD or connected with a storage device such as HDD, CD and DVD via the USB 2.0 port. The user can back up data in real-time monitoring, search, log, or playback mode.

5-13-1. Backup in Real-time Monitoring Mode

In real-time monitoring mode, select **{Menu} → {Backup} → {Backup}.** The backup menus will then appear.
The automatic backup time is set to 5 minutes before the Copy (Backup) button is pressed, and the end time, to the time the Copy (Backup) button is pressed.
All channels containing data at the time of backup are backed up automatically. Depending on the divided screen mode, however, only those channels that can be viewed may be selected.
For the remaining backup procedures, see **{Backup} → {Common Backup Procedure}**

5-13-2. Backup in Search Mode

Select {Menu} → {Search} → {Calendar Search}.
Click the right-mouse button or select **{MENU} button in the front panel**.
The automatic backup start time is set to the year/month/date/hour/minute set in search mode, and the end time, to the last minute/second of the data existing at the selected time.
All channels with existing data at the time of backup are backed up automatically.
For the remaining backup procedures, see **{Backup} → {Common Backup Procedure}**

5-13-3. Backup in Log Mode

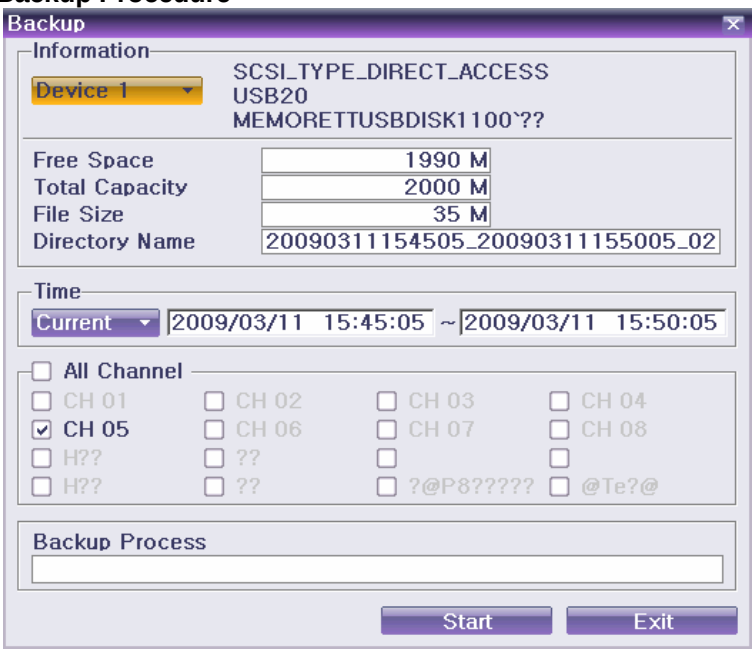
Select a date in {Menu} → {Miscellaneous} → {Log Viewer} and select a log related to the data to be backed up.
Click the right-mouse button or select **{MENU} button in the front panel**.
The automatic backup time is set to 5 minutes before the selected log is generated, and the end time, to the time the selected log is generated.
All channels with existing data at the time of backup are backed up automatically. If a log has been generated for a specific channel, however, then only that channel is selected.
For the remaining backup procedures, see **{Backup} → {Common Backup Procedure}**

5-13-4. Backup in Playback Mode

In Playback mode, select **{Playback Menu} → {Backup}**. Any playback in progress at this time will stop.
The automatic backup time is set to 5 minutes before the Copy (Backup) button is pressed, and the end time, to the time the Copy (Backup) button is pressed.
All channels containing data at the time of backup are backed up automatically. Depending on the divided

screen mode, however, only those channels that can be viewed may be selected.
For the remaining backup procedures, see **{4-13-5 Common Backup Procedure}**.

5-13-5. Common Backup Procedure



[Figure 4-25. Backup Window]

[Figure 4-25] shows the initial backup window menus.
A list of devices that can be selected as well as simple information on the currently selected devices are outputted.
Selecting a device by pressing the Select button causes the free space and total capacity for the selected device to be displayed.
Selecting a device causes the directory name based on the initial values for the time and channel to be displayed and the size of the file to be backed up to be calculated.
The directory name is set up using the backup time. The first 12 digits are determined by the year/month/date/hour/minute/second for From, and the 12 digits in the middle, by the year/month/date/hour/minute/second for To. The last 2 digits are determined by the number of folders in the selected device.
If a device is not selected, the backup time and channel cannot be changed.
Selecting a device enables selecting the backup time as well. As a rule, the From time cannot be later than the To time, and the To time cannot be earlier than the From time.
Selecting the item to be changed for the year/month/date/hour/minute/second and pressing the [Select] button will cause the values that can be set up to be displayed in the Scroll Box. If no channel has been selected, however, the time cannot be changed either.

※ The time displayed at this time means that there is data at the corresponding time. If there is no data, however, the time is not included in the Scroll Box.

Changing the backup time causes the name of the directory to be backed up to be changed as well.
To select the backup time, channel, or media, select **{Menu} → {Channel}**, **{Menu} → {Time}**, **{Menu} → {Media}**.

※ The channel to be backed up can only be selected if there is data within the selected time.

If the file to be backed up exceeds the free space, its size is displayed in a yellow box in case the selected device is capable of rerecording and in a red box if not.

	If the backup storage device is not formatted, in case the box displaying the size of the file to be backed up is displayed in yellow, and if backup is executed by pressing the Copy (Backup) button, a prompt asking whether to erase the device will appear as shown below. Selecting [YES] causes the storage medium for the selected device to be erased.

Press the Copy (Backup) button. A prompt asking whether to proceed with the backup or not will then be displayed.

※ Select [Yes] to back up the data or [No] to stop the backup. Otherwise, press the [Cancel] button to return to device selection mode on the backup window.

Select {Yes} to continue the backup.

5-14. Snapshot

The Snapshot function lets the user create a JPG file in real-time monitoring, playback, search, or log mode and back up the image data.

To back up the currently displayed image, select **{Menu} → {Backup} → {Snapshot}** in real-time monitoring mode, or **{Playback Menu} → {Backup} → {Snapshot}** in Playback mode.

When a USB2.0 backup device (excluding ODD devices) is searched, the JPG file is stored in the same device.

If there are no or more than two USB2.0 storage devices (excluding ODD devices), a window for selecting the device will be displayed.

If the selected device is an ODD device, a prompt asking whether to back up the ODD device will be displayed.

5-15. PTZ Camera Control

5-15-1. Conditions for Using the PTZ Features

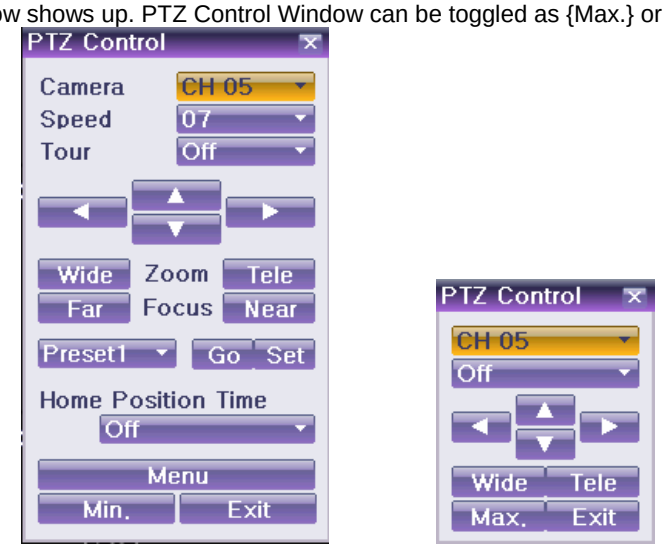
The PTZ camera must be connected to the system. For external connection, refer to **{2-2-2 Connection of Other Devices} → {4) PTZ Camera}**.

Select {Menu} → {Setup} → {PTZ} an check whether the PTZ camera setting is appropriate.

※ For more information on the PTZ camera setting, select **{Menu} → {Setup} → {PTZ}**.

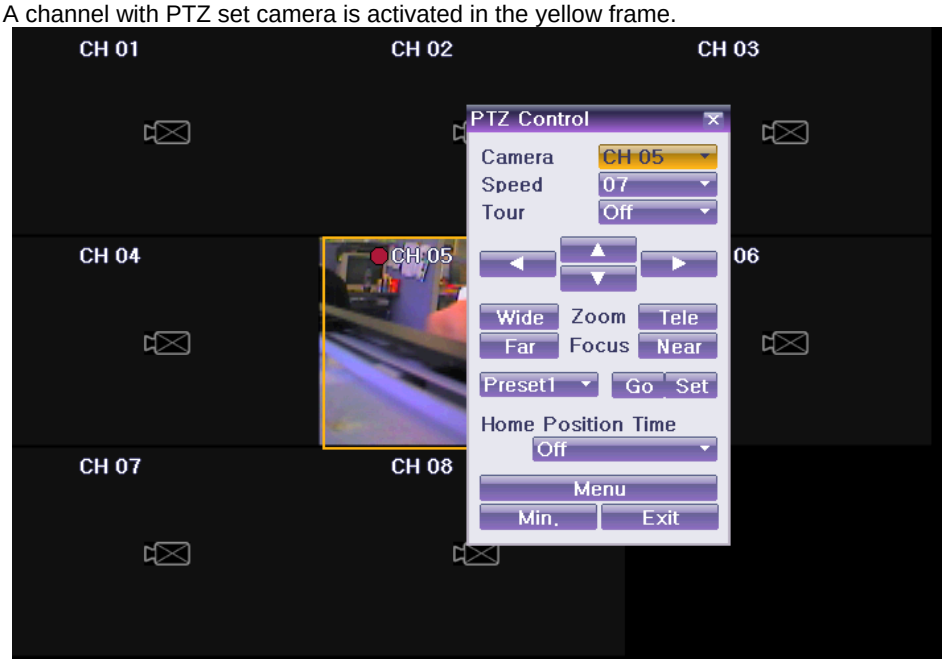
5-15-2. PTZ Mode

In real-time monitoring mode, select **{Menu}** → **{PTZ Control}**.
PTZ Control Window shows up. PTZ Control Window can be toggled as {Max.} or {Min.} as shown below.



[Figure 4-26. PTZ Control Window (Max. Mode (Left) / Min. Mode (Right))]

A channel with PTZ set camera is activated in the yellow frame.



[Figure 4-27. PTZ Mode Initial Screen]

	Activation mode	The channel is selected, and the channel screen border is highlighted in orange.

5-15-3. PTZ Control

A. Camera

Select the camera button. Only a channel with PTZ set camera can be activated.
Select PTZ to be controlled.

B. Speed

PTZ camera speed is adjustable.

C. Tour feature

※ For more information on setting the Tour feature, select **{Menu}** → **{Setup}** → **{PTZ}** → **{Tour}.**

In Tour, you can select [Disable] / [Able]. If you choose [Able], [Tour 1] and [Tour 2] are available.
8 spots of PTZ preset are available for each [Tour1] and [Tour2].
In Tour **{Menu}** → **{PTZ Control}**, you can set up Tour1/Tour2 and **[Disable].**

D. horizontal/vertical

Control horizontal/vertical movement using the arrow keys.

E. Zoom In/Out

Control Zoom using {Wide} / {Tele} buttons.

F. Focus Control

Control Focus using {Far} / {Near} buttons.

G. Preset {Set}

	Preset? Using horizontal/vertical/Zoon/Focus movement of PTZ Camera, zoom or focus a certain spot of the image by designating the coordinates and move to the designated coordinates quickly.

Move to a desired spot for Preset by using Horizontal/Vertical, Zoom and Focus.
Select 1~8 spots by pressing **{Preset}**
Press {Set} button to complete Preset setup.
Repeat ①-③ to another Preset. Up to 8 Preset are available.

H. Preset {Go}

Select Preset Number by using {**Preset} button.**
Pressing {**Go**} button moves PTZ camera by Horizontal/Vertical, Zoom and Focus movements to the Preset spot.

I. Home Position Time

If there are no controlling signals to PTZ camera after a certain time, it goes automatically to the Preset No.1 position as Preset No. 1 is designated as Home Position.

Select **{Home Position Time} using the arrow keys and the Select button.**
Select **{Off/10seconds/20seconds/30seconds/User Setup} using the arrow keys and the Select button.**

J. Menu

Select Menu button to shift to 1 channel view over PTZ set camera. PTZ Menu is controllable.

Chapter 6. Setup

6-1. Time

※ Function Description

1. Time Synchronization

1) Synchronization with the NTP server
The time is synchronized every hour with the NTP Server.
A. Automatic Setup
The nearest server from the user's zone will be selected for connection. If the connection fails, the next nearest server will be chosen.
B. User Setup
The user sets the URL or IP for the NTP server. If connection is not established, a message will be sent to

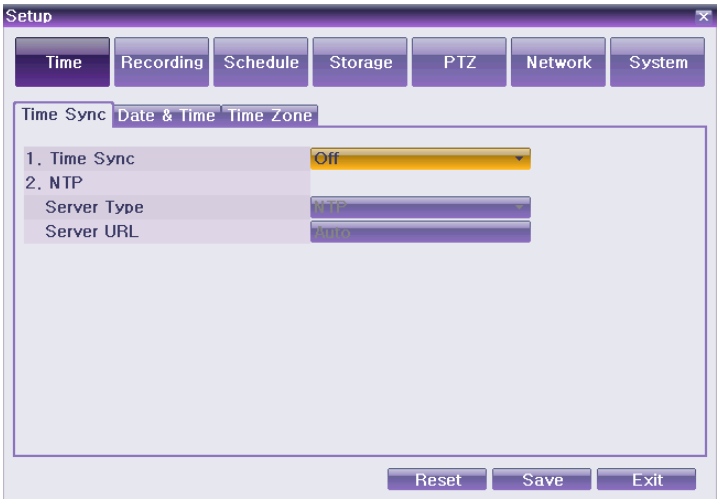
the user, and the related log, saved.
If synchronization with the NTP server fails, synchronization with RTC will be established.
2) Synchronization with the DVR Time Server
The DTS server is executed in the **VERTEX RTH, H.8 AND H.16-series**; time is synchronized every hour. VERTEX RTH, H.8 AND H.16 series DTS clients referring to the DTS synchronize the time of the DVR system operating with DTS.
When the DTS time or a zone is changed, the change is reflected on the VERTEX RTH, H.8 AND H.16 series belonging to the network (the synchronization signals are broadcasted without passing through the router or gateway). The DVR time server does not support automatic connection.

2. Daylight saving time (DST) setup
Regardless of whether GPS, NTP server, or DST server is referred to, DST is automatically processed according to the time.

3. User time setup
The user can set the time directly.
For the NTP client setup, the user can read the time but not change it

Move to **{Menu} → {Setup} → {Time} to set up Time Function.**

6-1-1. Time Sync



[Figure 5-28. Time Sync]

A. Time Sync

OFF	The time server is not used.
NTP	NTP is used to set the time for the time DVR.

B. NTP

{NTP} setup is available when {Time Sync} is set as NTP.

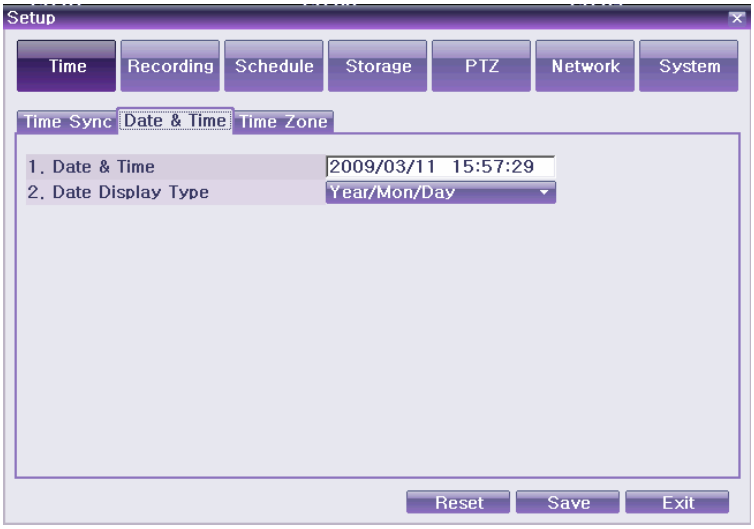
C. Server Type Setup

Select **{Server Type}** using the arrow keys and the Select button.
In the selection box, select the server type using the arrow keys and the [Select] button.

D. Server URL

Select **{Server URL}** using the arrow keys and the Select button.
In the selection box, select the server URL using the arrow keys and the [Select] button.
The user can enter the IP only when the server type is DVR. For the NTP server, Automatic, IP, or URL should be selected.

6-1-2. Date and Time



[Figure 5-29. Date and Time]

A. Date and Time

⚠	Only available when Time Server is off

The system date and time format is Year/Month/Day Hour/Minute/Second.
Using the arrow keys and the Select button, move the focus onto the desired field; Year/Month/Day Hour/Minute/Second and press the Select button.
Select the field you want to change using the arrow buttons and press the [Select] button.

B. Time Display Format

Select Time Display Format among [Day/Month/Year] / [Month/Day/Year] / [Year/Month/Day].

6-1-3. Time Zone

[Figure 5-30. Standard Time Zone]

A. Time Zone

Select {Standard Time Zone}.
On the selection window, select the standard time zone you want to set.

B. Daylight Saving Time

Using the arrow keys and the Select button, select **{Daylight Saving Time}**.
On the selection window, select On/Off using the arrow keys and the Select button.

C. Start Time

Using the arrow keys and the Select button, select **{Start Time}**.
On the selection window, set up Start Time using the arrow keys and the Select button.

D. End Time

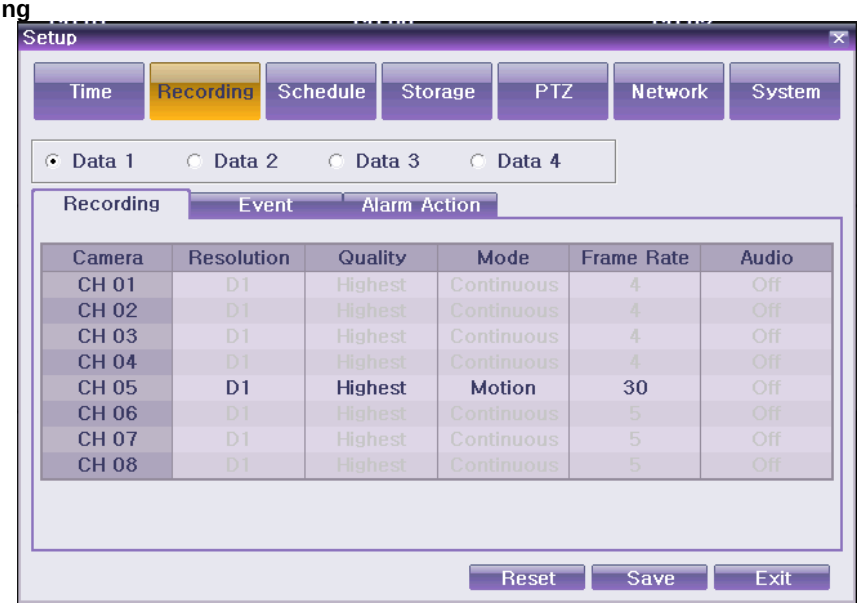
Using the arrow keys and the Select button, select **{End Time}**.
On the selection window, set up End Time using the arrow keys and the Select button.

	※ For a weekly setting in the **{Start Time}** and **{End Time}** fields, set Day to 0. ※ After the Daylight Saving Time is selected, the existing data will be displayed as "OLD_" in the search and log list.

6-2. Recording

Set up Recording, System environments and major features.

6-2-1. Recording



[Figure 5-31. Recording Window]

In real-time monitoring screen, select **{Menu}** → **{Setup}** → **{Recording}**.
Recording Window appears as shown [Figure 5-31].

6-2-2. Data Selection (Data 1 ~ Data 4)

On the Main Setup window, select data using the arrow keys (up to four data types are supported)
Each channel can be set as four different data types. If Data is set as the recording schedule, each time zone can be set as four different data setting.

6-2-3. Recording Setup

A) Camera (Camera Channel)

A. Camera Title

Name each camera. Max. 20 letters are available.

[Figure 5-32 Letter Input Window]

B. Covert

Used to hide the video channel on the real-time monitoring screen.

※ Video data are saved on the real-time monitoring screen even though they are not displayed in black.

C. Connection

Used to set whether to connect or disconnect each camera channel.

※ When the camera channel is set to disconnected, the video contents will not be displayed even if the camera is actually connected.

B) Recording Resolution

Used to set the resolution of the recorded channel.

	Resolution by Video Type	
Type / Resolution	NTSC	PAL
CIF	352 x 240	352 x 288
Field	704 x 240	704 x 288
Full	704 x 480	704 x 576

C) Recording Quality

Used to set the quality of the recorded video. Select among five levels **{Lowest} / {Low} / {Middle} / {High} / {Highest}**.

※ The higher quality requires the bigger file size.

D) Mode

Used to set the recording type for the channel.

Recording Type	Description
Automatic	Set the event recording speed and normal recording speed separately. Recording is carried out by automatically selecting the recording mode based on each setup value.
Continuous	Continuous recording is done based on the normal frame value.
Motion	Recording is done based on the event frame setting in case motion is detected.
Sensor	If input signal is generated from an external sensor, recording is done based on the event frame setting.

Recording Conditions

Recording Type	Setting	
Continuous	{Record} → {Rate} → Normal: 1~30	
Motion	{Event} → {Motion}: Part or All	{Record}→{Rate}→ Event: 1~30
Sensor	{Event} → {Sensor}: 1~16	
Automatic	Enables setting both Normal and Event simultaneously	

E) Recording Frame

In case of Continuous/Motion/Sensor/Audio Mode, the user can only set the frame. In case of Automatic Mode, the recording frame can be divided into the {Normal} type and {Event} type.

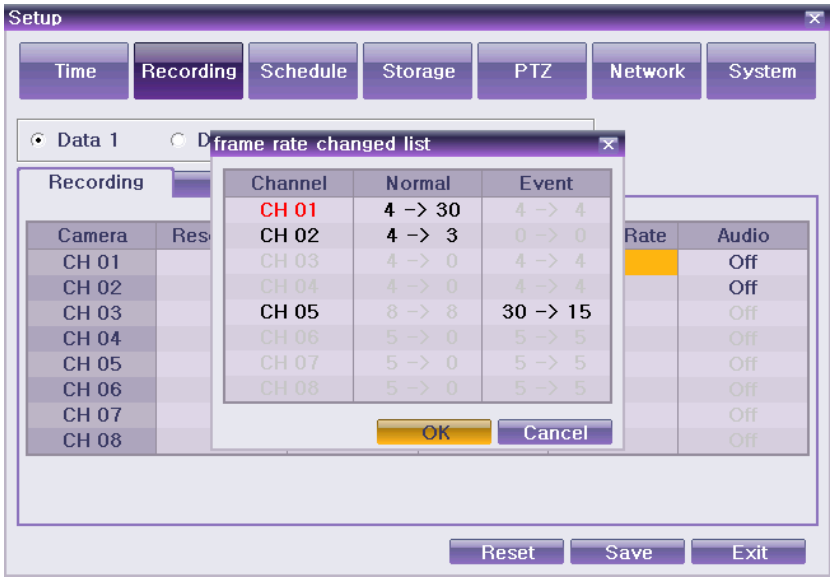
Normal	Sets the recording frame rate for Automatic and Continuous recording
Event	Sets the recording frame rate for Automatic, Motion and Sensor

Model \ Resolution	Maximum Recording Frame by Resolution (NTSC)		
	CIF (352 x 240)	**Field (704 x 240)**	**Full (704 x 480)**
VERTEX RTH-16 / H.16	480fps	240fps	120fps
VERTEX RTH-8 / H.8	240fps	120fps	60fps
VERTEX RTH-412	120fps	60fps	30fps

Select Frame Rate.

In adjusting the frame rate, setting the frame rate to be higher than the maximum frame rate causes a menu to be displayed as shown in [Figure 5-33]..

The red-colored channel is currently being set as shown in [Figure 5-33]. Any unused channel will be deleted first.



[Figure 5-33. Frame Rate Re-Setup Window]

F) Audio

Used to set the recording for the external audio input linked to the system.

6-2-4. Event

A) Motion

This function detects the movement of images. Detection settings include **{Off} / {Partial} / {All} / {Sensitivity}.** The default value is Off, however.

A. All

Detect all movements of images in each channel. Record only for the time set at **{Recording} → {Event} → {Post-Event}**

Select the channel to be set up at **{Recording} → {Event} → {Motion Detection}** using the arrow keys and the Select button.

Select **{All}** on the selection window**.**

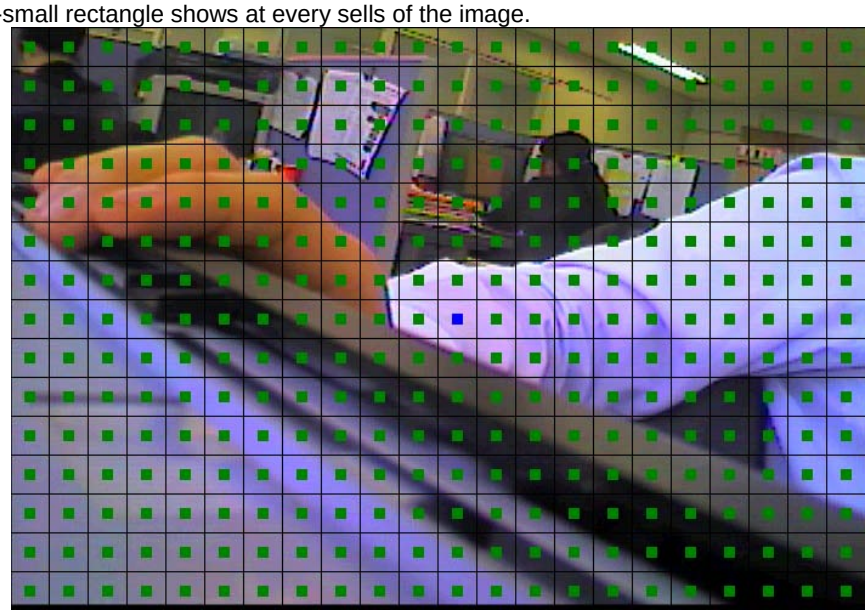
B. Partial

Detect movements of images on a certain designated area in each channel. Record only for the time set at **{Recording} → {Event} → {Post-Event}**.

Select the channel to be set up at **{Recording} → {Event} → {Motion Detection}** using the arrow keys and the Select button.

Select {Partial} on the selection window. The selected channel turns into the 1 channel mode.

A green-small rectangle shows at every sells of the image.



[Figure 5-34. Motion Setup]

Move the blue-rectangle to the desired area for Motion Detection and press the Select button.

⑤ Using the arrow keys, designate the motion detection area and the green-rectangle will disappear. Press the Select button. .

to designate another area, repeat ④-⑤.

Exit Motion Setup by ESC in the front panel or the right-mouse button.

Method of Selecting the Zone	
	※ The [Select] button is operated by Toggling. ※ In the above description, the Select button means the button in the front panel and the same function as double-click of the mouse.

C. Off

Motion detection in the video is disabled..

D. Select the motion detection sensitivity.

In the selection window, select the sensitivity using the arrow keys and the Menu button. The sensitivity can be set among **{Lowest} / {Low} / {Middle} / {High} / {Highest}.**

Method of Setting the Sensitivity	
	Current sensitivity levels -- Lowest/Low/Middle/High/Highest -- indicate the proportion of pixels within a block for which motion was detected. Therefore, the higher the selected level is, the faster the motion that can be detected.

B) Sensor

This sets the detection of input made by external sensors interworking with the system. Up to 16 external

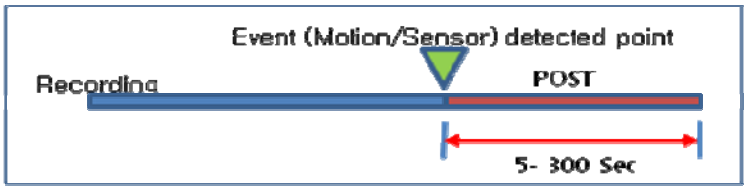
sensors can be set. When a signal of an external sensor is detected, the video of the corresponding channel will be recorded.

In the sensor selection window, select a external sensor channel.
Select the sensor type.

	NC(Normal Close) : Normally closed; opens when a signal is received **NO(Normal Open)** : Normally open; closes when a signal is received

C) Post-Event

Set up the time of the recording duration after an event is taken place. Select between 5 – 300 seconds.



[Figure 5-35. Motion Setup]

Select the recording duration using the arrow keys and the Select button.

	The recording duration unit is a second. Record the image for the duration time set at every event detected. The user can set every channel with the same duration by pressing the Select button after moving the focus on the top of **{Post}** column.

6-2-5. Alarm Action

This feature is used to generate alarms through the buzzer, mail, spot monitor, Relay or TTL in case of an event.

A) Alarm

A. Motion

Move to **{Menu}** → **{Setup}** → **{Recording}** → **{Recording}** → **{Mode}.** The alarm goes off if the motion is detected. Select {On} / {Off}.

B. Sensor

Move to **{Menu}** → **{Setup}** → **{Recording}** → **{Recording}** → **{Mode}.** The alarm goes off if the sensor is detected. Select {On} / {Off}.

B) PTZ Preset

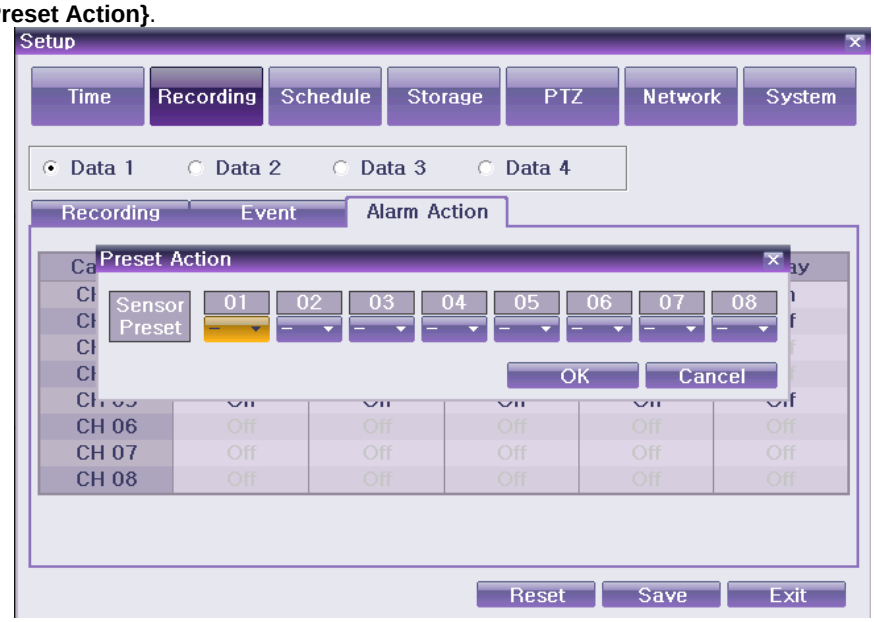
When an event occurs, the PTZ camera will be preset.

A. Sensor

Move to **{Menu}** → **{Setup}** → **{Recording}** → **{Recording}** → **{Mode}.** PTZ camera goes to the pre-set position if the sensor is detected. Select {On} / {Off}.

B. Preset Action

Select the channel at **{Menu} → {Setup} → {Recording} → {Alarm Action} → {PTZ Preset}**.
Select **{Preset Action}**.



[Figure 5-36. Preset Action Setup Window]

	The user can set every channel with the same duration by pressing the Select button after moving the focus on the top of **{Preset}** column. Preset are available up to 1 ~ 8.

C) E-mail

When an alarm or an event occurs, emails will be sent to the specified email address. The text of E-mail can be shown at **{Menu} → {Miscellaneous} → {Log Viewer}.**

A. Motion

Move to **{Menu} → {Setup} → {Recording} → {Recording} → {Mode}.** The e-mail will be sent if the motion is detected.

B. Sensor

Move to **{Menu} → {Setup} → {Recording} → {Recording} → {Mode}.** The e-mail will be sent if the sensor is detected. Select {On} / {Off}.

D) Event Spot

Displays the video on the TV monitor connected to the spot port on the rear side of the system in case of an alarm or an event.

A. Motion

Move to **{Menu} → {Setup} → {Recording} → {Recording} → {Mode}.** Display the video on the Spot TV monitor if the motion is detected. Select {On} / {Off}.

B. Sensor

Move to **{Menu} → {Setup} → {Recording} → {Recording} → {Mode}.** Display the video on the Spot TV monitor if the sensor is detected. Select {On} / {Off}.

E) Relay Output

In case an alarm or an event occurs, all external alarm devices connected to the relay port will be triggered. Depending on the models, up to 1-4 relays are supported.

A. Motion

Move to **{Menu} → {Setup} → {Recording} → {Recording} → {Mode}.** Relay the external device if the motion is detected. Select {On} / {Off}.

B. Sensor

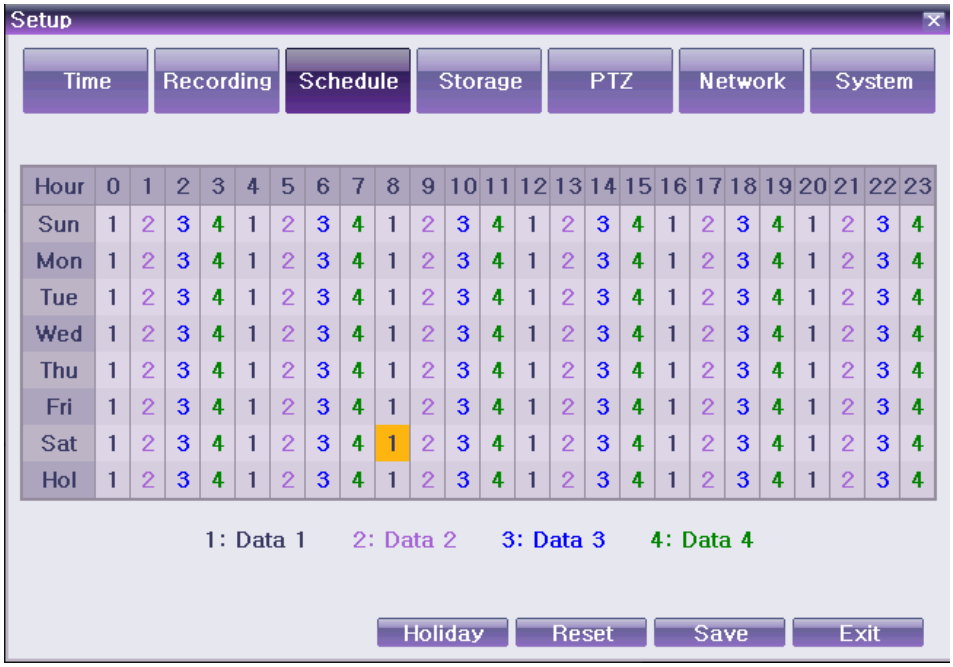
Move to **{Menu} → {Setup} → {Recording} → {Recording} → {Mode}.** Relay the external device if the sensor is detected. Select {On} / {Off}.

C. Relay Type

Select the relay type; NC/NO.

6-3. Recording Schedule

{Recording Schedule} is used to save the system configuration as data from **Data 1 to Data 4** and to make a recording based on the system configuration for each day/time zone.



[Figure 5-37. Recording Schedule Window]

6-3-1. Enter to Recording Schedule Menu

Select **{Menu}** → **{Setup}** → **{Recording Schedule}.**
Recording Schedule Window appears as shown in [Figure 5-37].

6-3-2. Recording Schedule Setup

(1) Set a line(Left to Right)

Select the date and time to be set using the arrow keys.
Select the data you want to set.

a) Pressing (or double-clicking) the Select button causes only the selected date and times to be set.
b) Select (or right-click) the Menu button to make the setting for all time zones after the selected date and the time zone.

On the selection window, set the data using the arrow keys and the Select button.

(2) Set a line(Top to Bottom)

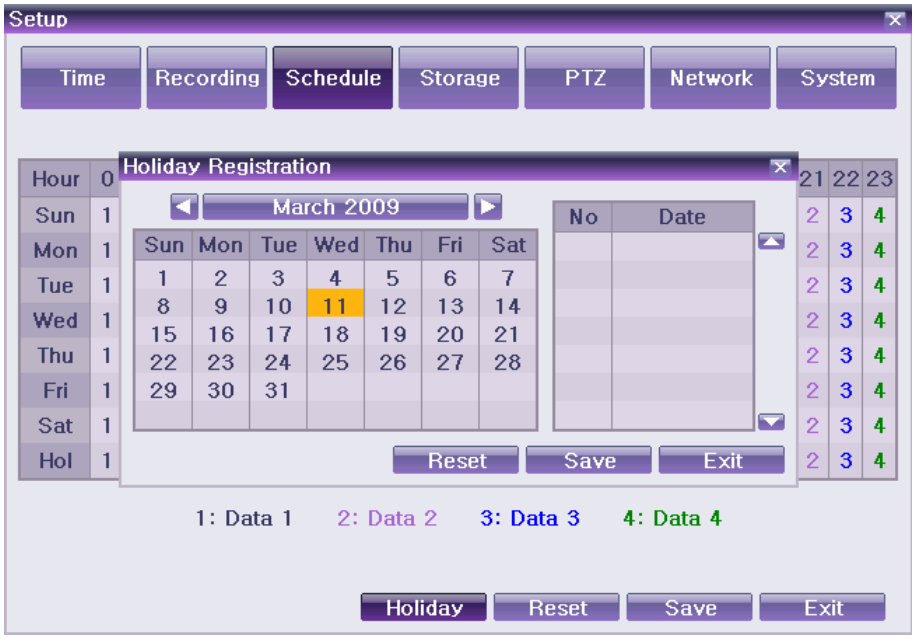
Go to the top of the time column using the arrow keys.
Select the data you want to set.

a) Press (or double-click) the Select button to set only one column.
b) Select (or right-click) the Menu button to make the setting for all time zones after the selected time zone.

On the selection window, set the data using the arrow keys and the Select button.

(3) Setting Holiday

This feature is used to enable the user to set the holidays.



[Figure 5-38. Holiday Registration Window]

	If the date for the holiday and day of the week are the same in the **{Recording Schedule}** menu, the holiday setup will have priority over the date setup.

Ⓐ Calendar
- The defined holidays will be indicated with a red tag.

Ⓑ Holiday List
- The list of all defined holidays will be displayed.
- A total of 15 holidays will be displayed per page, and the rest, on the succeeding pages.

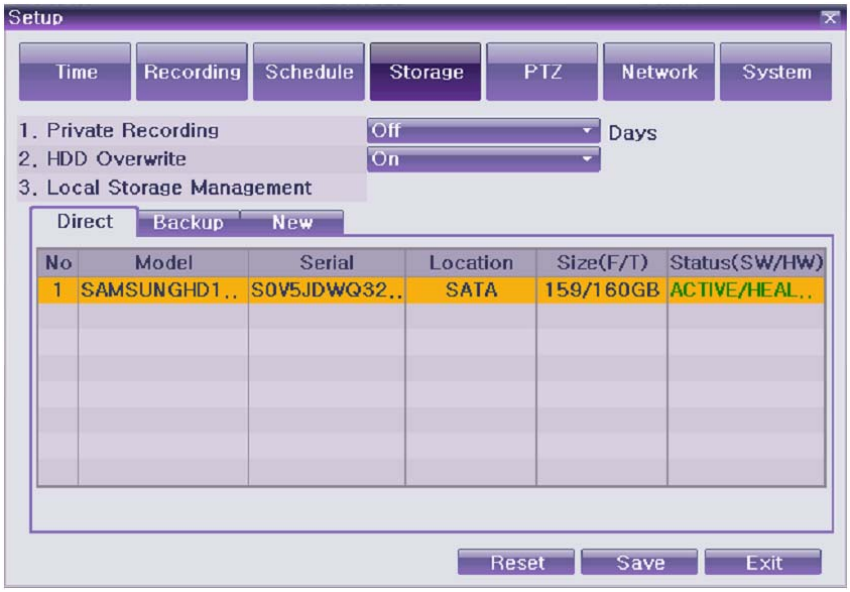
Ⓒ Holiday Information
- Detailed information for the selected date will be displayed.
- **{Page}** shows the page count when there are more than 15 holidays {Current page/Total page}.

{Holiday No.} is the holiday number arranged by date.
{Number of selected holidays/Total number of holidays}
{Date} shows the date of the holiday.

In the {Recording Schedule} menu, select **{Menu} → {Holiday}.**
On the {Holiday Registration Window}, select the date using the arrow keys and the Select button and press the Select button.
After setting the holiday, press the [Save] button at the bottom of the menu. Afterward, press the [Select] button.

6-4. Storage

Select {Menu} → {Setup} → {Storage}



[Figure 5-39. Storage Window (Local)]

	To apply the new setting, save the new setting. **Initialization**: initialize the menu as the basic setting. **Save**: Saves the setting data. **Exit**: Ask if the user wants to save the setting data.

6-4-1. Private Recording

This is to limit the recording days. If you set it as 30days, max. 30days will be recorded and over 30days recording data will be automatically deleted.

6-4-2. HDD Overwrite

Set On/Off for HDD Overwrite.

Select On/Off for HDD Overwrite.

ON	If there is no more hard disk space left, the existing files will be overwritten starting with the oldest.
OFF	If there is no more hard disk space left, further recording will not be executed.

6-4-3. Local Storage Management

Local Storage is classified and managed as three parts; **{Direct}, {Backup} and {New}.**

A. Local Storage Management Function

Local Storage refers to the internal hard disk and storages connected to the system via USB. Local Storage is classified and managed as **{New}, {Direct} and {Backup}**, and functions are described below.

New

For VERTEX RTH, H.8 AND H.16 series, all storages, initially detected are managed in New. All initially detected storages are displayed as New and can be changed into Storage or Backup.

Direct Initialize	Changes the selected storage into a dedicated (Direct) storage.
Backup Initialize	Changes the selected storage into a backup storage.

Caution	In {New}, At least, one storage shall be selected as a dedicated storage. Otherwise, the data cannot be stored in real time.

Direct

The dedicated (Direct) storage is managed in Direct. A dedicated (direct) storage stores data on the hard disk in

real time. Five commands can be executed. Depending on the S/W status, however, some commands cannot be executed.

New	Returns the status of the selected storage device to New; if this command is executed, the selected storage device will be moved to the {New} storage device manager.
Online	Changes the selected storage device in online state.
Offline	Changes the selected storage device in offline state.
Format	Format the selected storage.
Eject	Separates the selected device completely from the software.
	※ Physical states supporting the execution of the commands above include Healthy and Warning. In fault state, however, no command can be executed.

When removing a hard disk installed in the DVR or storages connected to USB port, the user shall execute the **{Eject}** command.

Backup

The backup storage is managed in Backup. Backup storages are not used to store data; rather, they are only used to back up data. The user can execute only the **{New}** command.

Depending on the storage type, the storage is used only for {Direct} or {Backup} purposes.

(2) Configuration of the local storage device

Model	Model name of the storage device.
Serial	Serial number of the storage device.
Location	Physical location of the storage device.
Capacity(T/F)	Storage device capacity (T: Total; F: Free)
Status(SW/HW)	Storage device status (SW: Software; HW: Hardware)

	※ There are three software status types.
Active	Connected to storage or backup device; currently saving the data.
Online	Only connected to storage or backup device.
Offline	Not connected to storage or backup device.

	※ There are three hardware status types.
Healthy	Connected to storage or backup device; functions normally.
Warning	Connected to storage or backup device, but error was detected; in this case, data storing or backup cannot be made (for more information, see the description below).
Fault	Not connected to storage or backup device; cannot perform data saving or backup.

1. **Fault State**: The storage device is completely damaged, and none of the S/W operations can be performed. The fault state is not related to a DVR problem. The DVR has detected the fault and stopped the recording.
2. **Warning State:** The storage device has a physical error that can be corrected by the storage device or by the DVR. If the error is not taken care of, however, the storage device is likely to be damaged (and shift to fault state). Backing up data in the corresponding storage device and replacing the device with a normal one are strongly recommended.
3. If there is an active storage device with a warning or a fault, a message is displayed on the upper left part of the screen.

B. Operation after adding a local storage device

Open the system body and install a new disk (connect the data cable and the power cable).
Connect power to the system and boot the system.
Select **{Menu} → {Setup} → {Storage}** using the arrow keys and the Select button**.**
A newly displayed disk will then be displayed as **{New}**.
Select a newly installed disk using the arrow keys and the Select button and initialize the disk as a {Direct} or a {Backup} disk. The following describes the method of setting a direct storage.

※Selecting {Direct-Init} or {Backup-Init} causes all data in the device to be erased. Therefore, caution is required.

※While {Direct-Init} or {Backup-Init} is being set up, do not remove the device (may cause an error when detecting the device).

Caution

※To use the external or portable storage device for system upgrade, set to {Backup-Init} in the {New} item for {Main Setup} {Storage Device} {Local Storage Device Management}.

※When used in DVR equipment for the first time, a backup USB device will always be detected in the {New} category. Therefore, a USB device in the {New} category must be set up as {Backup-Init} prior to use for backup. A USB device that has gone through this procedure will be detected in the {Backup} category when used again in the DVR equipment.

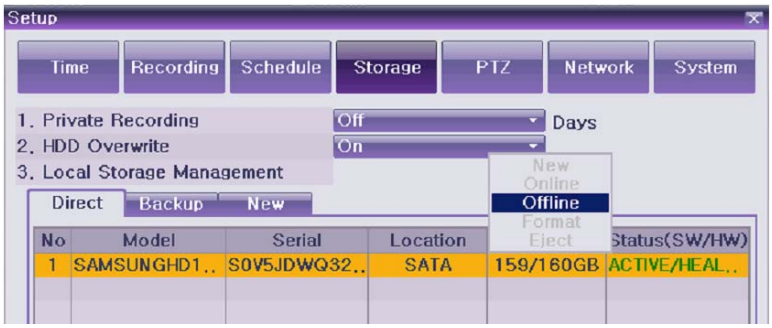
{Direct} shows the status of the newly installed disk online.

C. Operation of the local storage device

From the Manage Local Storage menu, select **{Direct}**, **{Backup}**, and **{New}** using the arrow keys.
If there is a valid storage device in the corresponding tab, the desired storage device may be selected using the arrow buttons.
Select the storage using the Select button. Popup menus will then be displayed.
Select menus using the arrow keys and the Select button.

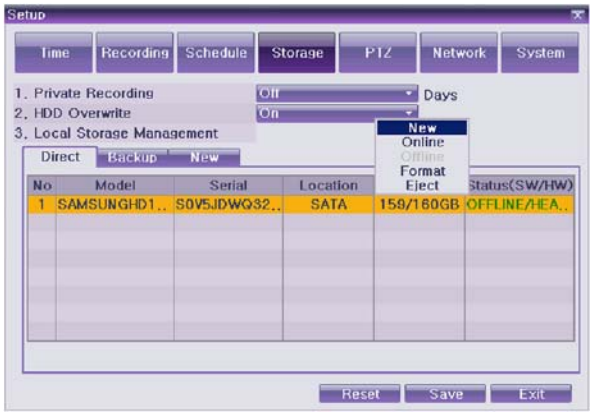
D. Direct HDD Format

Select the desired model in **{Menu} → {Setup} → {Storage}** and the window as shown below appears**.**



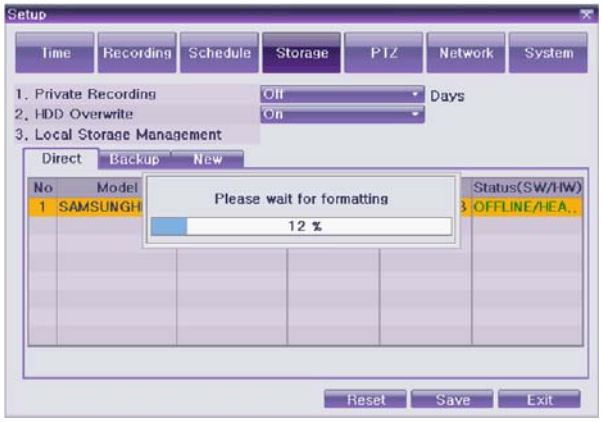
[Figure 5-40. Storage Offline]

Select Offline and select the model as shown below..



[Figure 5-41. Storage Format]

Then, the user is able to choose [New/Online/Format/Eject]. Select Format and formatting progress as shown below.



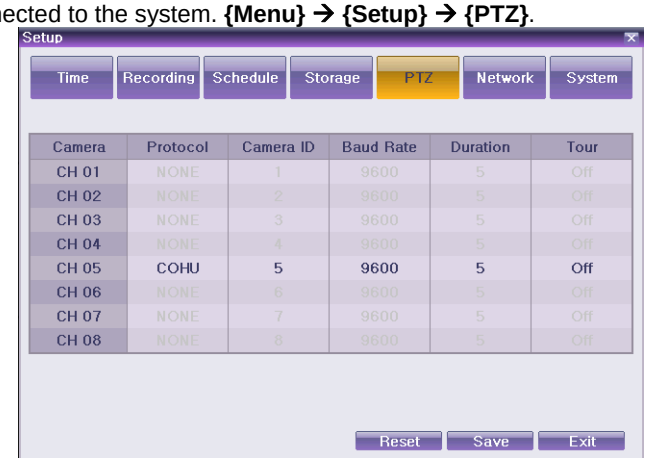
[Figure 5-42. Storage formatting in progress message]

It may take time during formatting.

After formatting, select the model again and set as Online.
Format is completed.

6-5. PTZ

Set the PTZ camera connected to the system. **{Menu}** → **{Setup}** → **{PTZ}**.



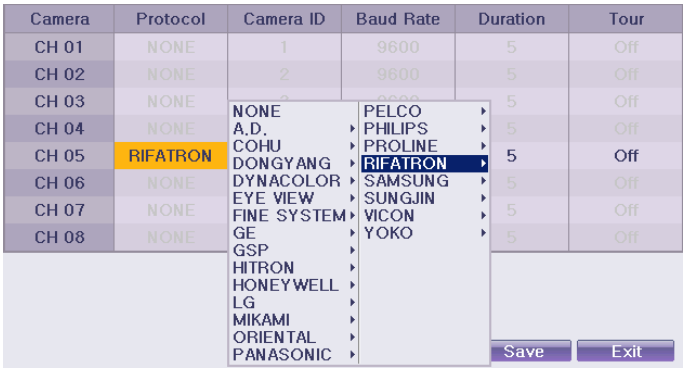
[Figure 5-43. PTZ Window]

Camera	Displays Channel No. 1 ~ 16
Protocol	Sets the protocol for communicating with the PTZ camera
Camera ID	ID set up in the PTZ camera
Transmission Rate	Communication speed (must be the same as that defined in the camera manual)
Preset Duration	Time interval required to change to the assigned screen between the Preset defined in the Tour feature and the next Preset (5 ~60 seconds)
Tour	Sets the Tour feature (Tour 1 and Tour 2)

6-5-1. PTZ Protocol Setup

PTZ protocol refers to the rule for communicating with the PTZ camera.

From the PTZ Setup menu, select the PTZ protocol for the channel you want to set using the arrow keys and the Select button.



[Figure 5-44. PTZ Protocol Window]

On the selection window, select the PTZ protocol using the arrow keys and the Select button.

6-5-2. Camera ID setup

Camera ID refers to the address used for communicating with the PTZ camera.

⚠	※ The camera ID must be the same as the ID set in the PTZ camera. ※ Different methods are used to set the address of the PTZ camera depending on the camera manufacturer or model. Refer to the camera manual of each manufacturer for the correct information.

From the PTZ Setup menu, select the camera ID for the channel using the arrow keys and the Select button.

In the selection box, select the camera ID using the arrow keys and the [Select] button.

6-5-3. Baud Rate Setup

The transmission rate refers to the speed of communication with the PTZ camera.

⚠	※ The Baud rate must be the same as the communication speed of the PTZ camera. ※ The Baud rates and setup methods for PTZ cameras vary by camera manufacturer or model. Refer to the camera manual for details.

From the PTZ Setup menu, select the Baud rate for the channel using the arrow keys and the Select button.

On the selection window, select the Baud speed using the arrow keys and the Select button.

6-5-4. Duration Setup

Tour interval time (select between 5 and 60 seconds).

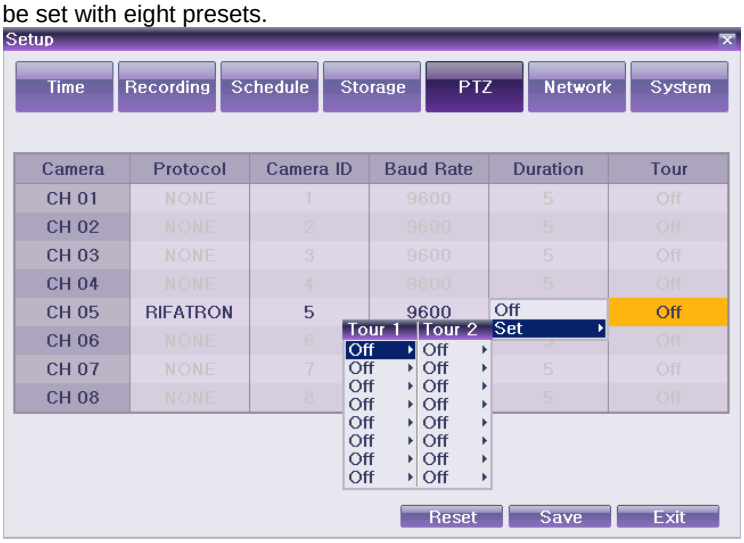
From the Preset Setup menu, select the preset time for the channel using the arrow keys and the Select button.

In the selection box, set the duration using the arrow keys and the [Select] button.

6-5-5. Tour Setup

Automatically controls the preset PTZ camera according to the predefined order.

Select Tour of the desired channel. Two Tour are available in VERTEX RTH, H.8 AND H.16 series and each Tour can be set with eight presets.



[Figure 5-45. Tour Setup Window]

Set Tour in the selection window.

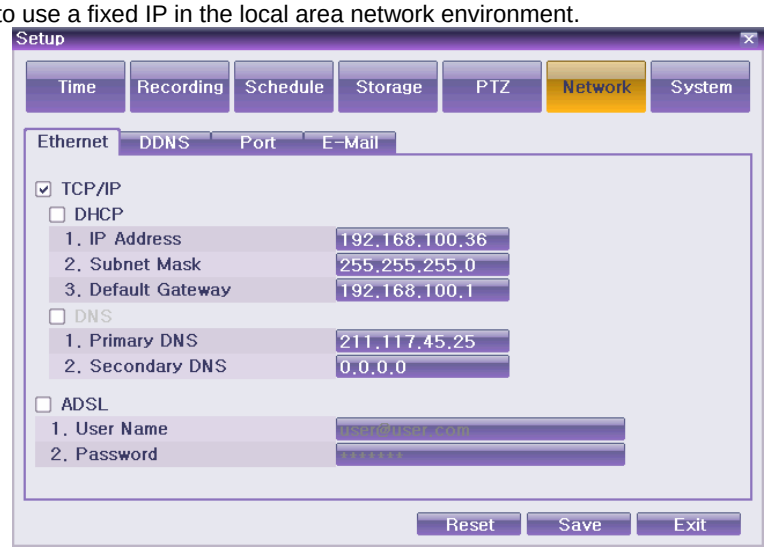
6-6. Network

Set the system network. **{Menu} → {Setup} → {Network}**

6-6-1. Ethernet

1) TCP/IP

Setup is performed to use a fixed IP in the local area network environment.



[Figure 5-46. Setup Network Window]

Select **{Ethernet}** in **{Menu} → {Setup} → {Network}**.
Select {TCP/IP}.
Save after filling in IP Address, Subnet Mask, Standard Gateway, Standard DNS, and Alternative DNS.

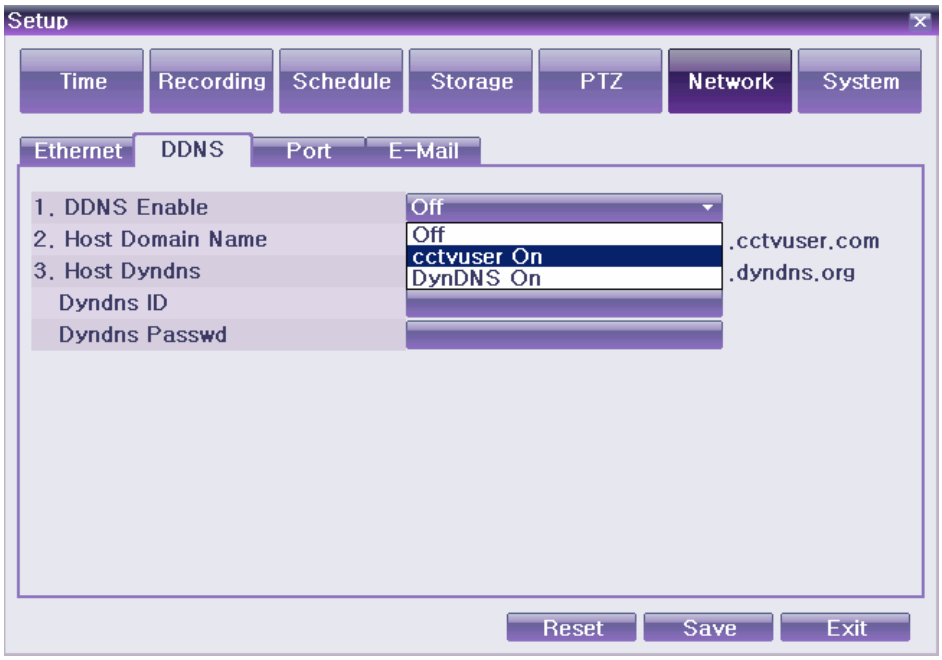
2) ADSL

This feature is used in the user authentication-type ADSL communication environment.

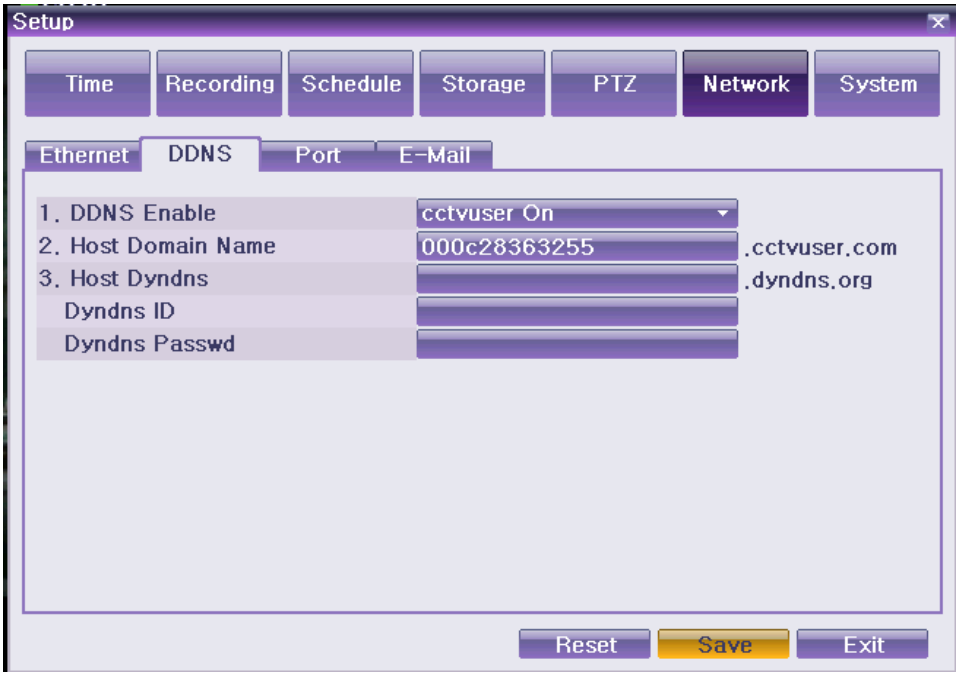
Select **{ADSL}**.
Save after filling in User Name and Password.

6-6-2. DDNS

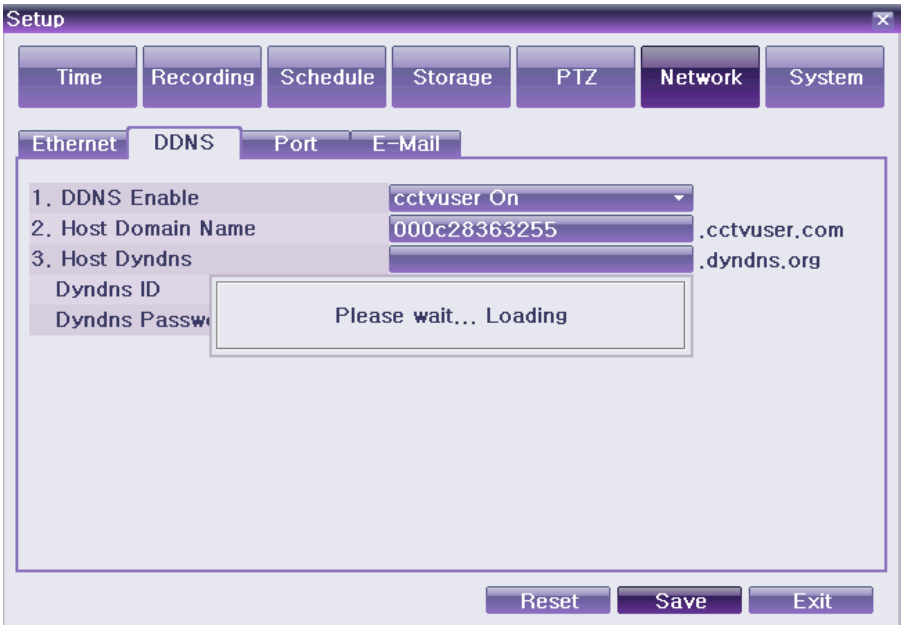
As part of the DNS system, the Dynamic Domain Name System (DDNS) service updates the IP addresses of host names in real time and allocates fixed domain names to systems linked to dynamic IP addresses to allow users to use the same DNS name regardless of the changes in the IP address.
The VERTEX RTH, H.8 AND H.16 series provides dynamic DNS to ensure URL access in the dynamic IP environment.
User can monitor the remote place thru internet with web server functions which is equipped in DVR.



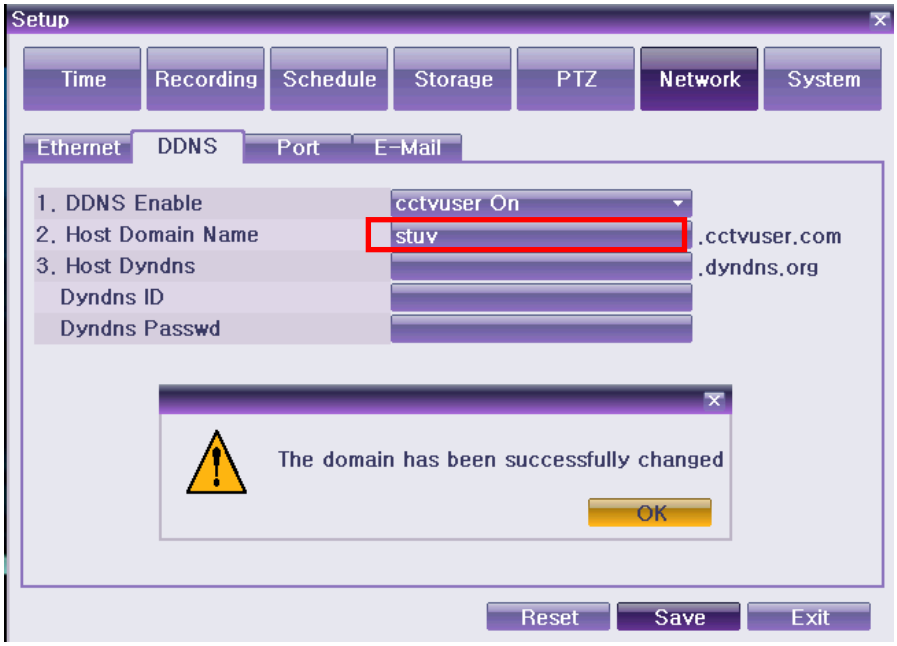
[Figure 5-47. DDNS Window]



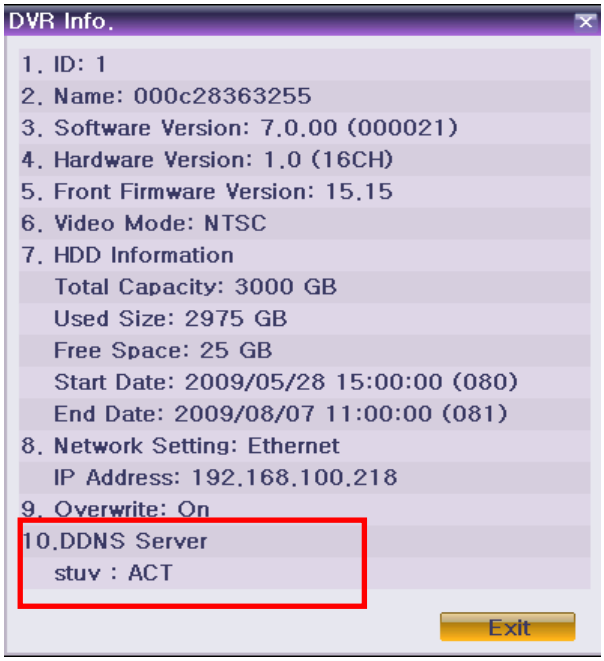
[Figure 5- 48. DDNS Window with MAC Address]



[Figure 5- 49. DDNS Setting]



[Figure 5-50. DDNS Domain name changed]



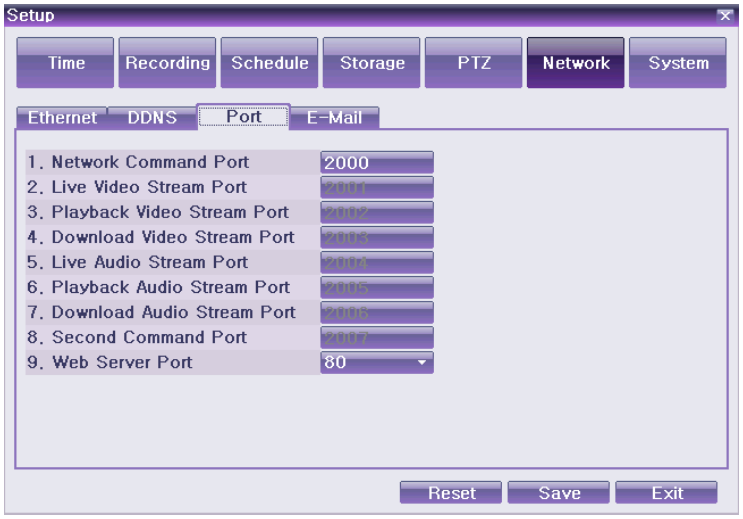
[Figure 5-51. DDNS Status]

Select **{DDNS}** in **{Menu}** → **{Setup}** → **{Network}**.
Save after entering the DDNS Enable as 'cctvuser On' as Figure 5-47. MAC address is automatically saved as DDNS address as Figure 5-48.
You can see the sign ' Wait please…Loading as Figure 5-49.
After that, it is working fine if every network setup is correct.
If you are not familiar with MAC Address as a DDNS, you can change it whatever you like. If it is not duplicated one, you can see the successful sign as Figure 5-50.
Finally, you can check the status of DDNS thru DVR info. As Figure 5-51.

	※ 'DynDNS On' is for users who has ID of www.dyndns.com ※ The default IP address of the DDNS server is 211.117.45.25.

6-6-3. Port

This feature is used to set up the user for the network port.
The default value is between 2000 and 2007; a randomly chosen value can be used depending on the network environment, e.g., firewall. The Web Server Port is used to connect the DVR monitor. The default value is 80 (a random number may also be used, however).

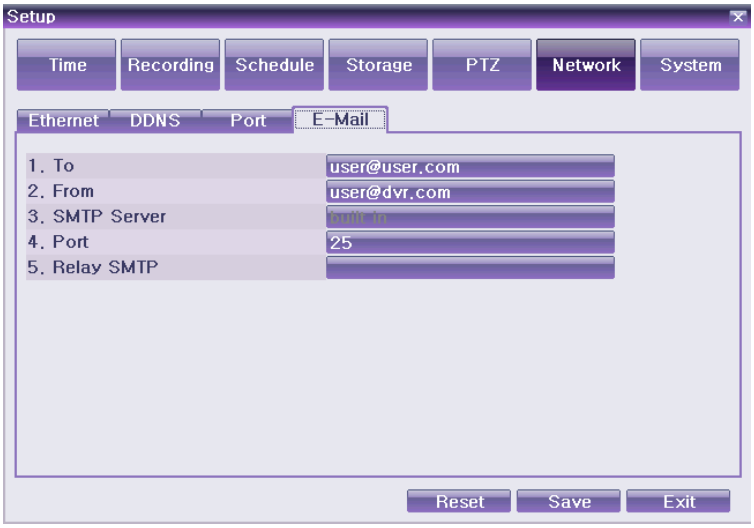


[Figure 5-52. Port Window]

Select **{Port}** in **{Menu}** → **{Setup}** → **{Network}**.
Save after entering each port number.

6-6-4. E-mail

Automatic E-mail transmission service when an alarm or an event occurs.
To use the e-mail function, {E-mail} in **{Menu}** → **{Setup}** → **{System}** → **{9. Alarm}** needs to be configured.



[Figure 5-53. E-mail Window]

Select **{Menu}** → **{Setup}** → **{Network}** → **{E-mail}**.
Save after entering the detail about E-mail.

6-7. System

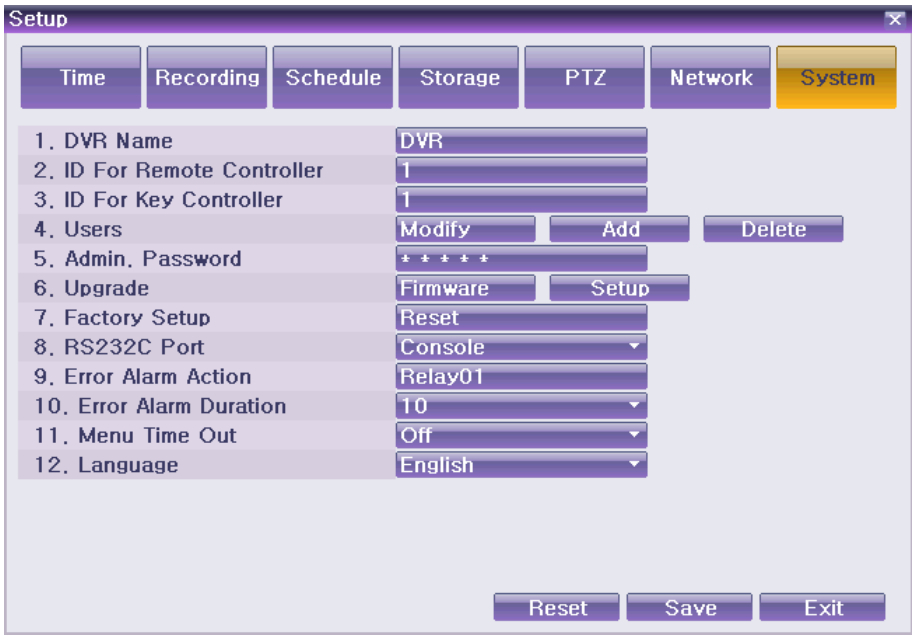
In **{Menu}** → **{Setup}** → **{System},** the user can configure the system and the auxiliary features of the system.

1. DVR Name	Used to name the DVR device
2. ID For Remote Controller	Used to name the remote controller for running the system
3. ID For Key Controller	Unique system controller number setting
4. Users	Used to register, add, or delete users
5. Admin. Password	Used to set the password of the Local System Administrator
6. Upgrade	Upgrades the system firmware
7. Factory Setup	Initialize Setup.(Factory default value)

8. RS232C Port	Use of the RS232C port
9. Error Alarm Action	Set the alarm On/Off and alarm format.
10. Error Alarm Duration	Set the alarm time by continuous/5/10/15/User Setup.
11. Menu Time Out	Used to set the time for exiting the System Setup menu automatically and displaying the real-time monitoring screen.
12. Language	System OSD language setting

6-7-1. System Menu

Select System at **{Menu} → {Setup}**.
System Setup Window, as shown below, appears.



[Figure 5- 54System Setup Window]

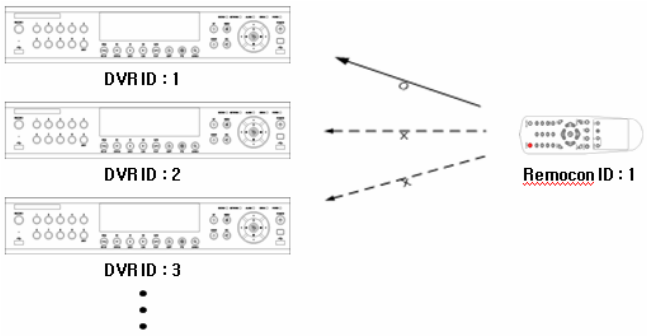
6-7-2. DVR Name

Move to **{Menu} → {Setup} → {System} → {1. DVR Name}**.
Enter the name in the input window using the arrow keys and the Select button. (It supports up to 20 letters for the system name.)

6-7-3. ID for Remote Controller

When multiple devices are used, set the remote controller ID to identify input signals from a remote controller. **(VERTEX RTH-Series only. H.8 AND H.16-Series does not support this function.)**

	Only the system wherein the DVR ID and remote controller ID match can receive input signals from the remote controller as shown below.



Move to **{Menu} → {Setup} → {System} → {2. Remote Controller ID}.**
In the selection window, enter ID using the arrow keys and the Select button (the number 0~99 is available for ID.)

	If you forgot the DVR ID, set the remote controller ID to 999 to start the DVR. Note, however, that the DVR ID should be the same as the remote controller ID.
	※To Configure Remote Controller ID (Example: ID setting as 3) 1) Press {ID} button on the remote controller. 2) Press the {0} key and {3} key. 3) Press {ID} button again. 4) Remote Controller ID is set as 3.

6-7-4. ID For Key Controller

Move to **{Menu} → {Setup} → {System} → → {3. ID For Key Controller}**.
In the selection window, enter ID using the arrow keys and the Select button (the number 0~255 is available for ID.)

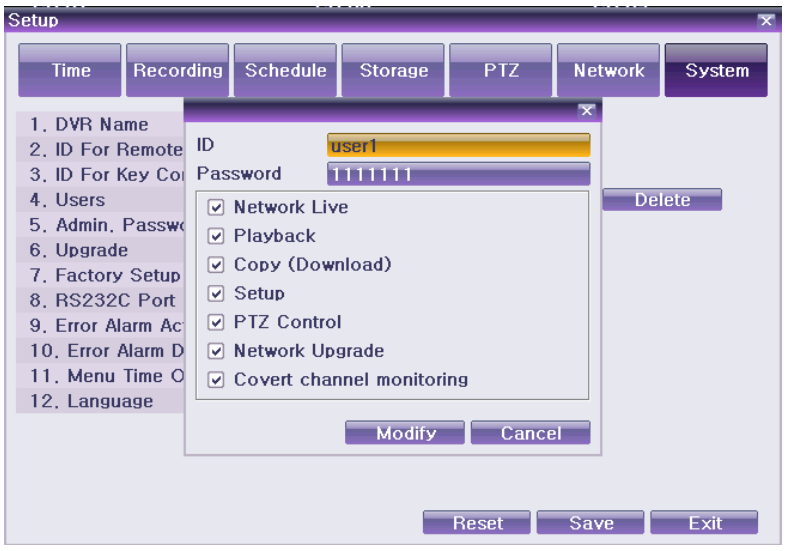
6-7-5. Users

Adds, edits, or deletes the users who will operate the system.

System Access Authorization	
Network Live	Enables viewing real-time images upon network access
Playback	Enables viewing the Recorded Screen
Copy (download)	Copies and downloads files
Setup	Data setup, recording schedule, system, storage, NTP, advanced setup, PTZ camera, network, camera/TV setting
PTZ Control	PTZ Camera control
Network Upgrade	Remote network upgrade
Covert channel monitoring	Enables viewing hidden channels on the network

(1) Edit User Information

Move to **{Menu} → {Setup} → {System} → {Users} → {User Edition}**.
On the selection window, select a user using the arrow keys and the Select button.
On the user authorization setting window, select the user authorization using the arrow keys as shown below.



[Figure 5-55. User Authorization Setup Window]

(2) Add Users

Move to **{Menu} → {Setup} → {System} → {Users} → {User Addition}**.
On the user registration window, enter the ID and the password. Up to four users can be registered (the user ID and password may contain up to 30 English letters)
After entering the user ID and password, select the user authorization.

(3) Delete Users

Move to **{Menu} → {Setup} → {System} → {Users} → {User Delete}**.
On the selection window, select the user you want to delete using the arrow keys and the Select button.

6-7-6. Admin. Password

Move to **{Menu} → {Setup} → {System} → {5. Admin. Password}**.
On the password input window, enter a password using the numeric buttons of the remote controller or the arrow keys and the Select button (the password can contain up to five digits)

6-7-7. Upgrade

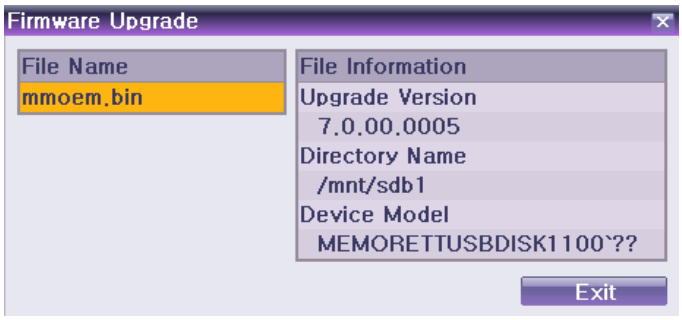
The product can be easily upgraded through the use of an external storage device or a portable storage device with USB 2.0 port.

Find and copy the upgrade file to the highest folder in the external storage device or portable storage device supporting USB 2.0.

	1) When copying an upgrade file from the PC, delete the USB device properly from the PC and disconnect it from the USB port. 2) If the USB device is disconnected from the USB port while the upgrade file is being copied, the DVR system may not automatically detect the file. 3) Upgrading is impossible if the HDD is not mounted.

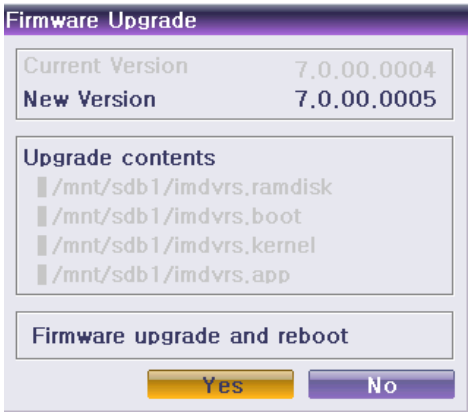
	Removing USB during the upgrade in progress may cause damage on the system.

Connect the storage device with an upgrade file stored in the USB 2.0 port at Left/Right front panel..
Move to **{Menu} → {Setup} → {System} → {6. Upgrade}**
Select **{Firmware}** and the upgrade file list stored in the selected device and simple version information for the selected file is then displayed as shown below.



[Figure 5-56. Firmware Upgrade File List Window]

After selecting the file to be upgrade and a window shown below appears.



[Figure 5-57. Firmware Upgrade Progressing Window]

⚠	※ Downgrading to a previous version is not supported. ※ It is recommended that the DVR ID should be the same as the remote controller ID. ※ The upgrade information window will then appear within 15 seconds.

Read the information and select {Yes} to start the upgrade gradually. Select {No} to return to **{System}** mode.
After the update is completed, the system will be rebooted.
The system will automatically start. Upgrade is then completed.
Move to **{Status}** → **{Product Information}** → **{Software Version}** to check the version**.**

⚠	※All setup data are a fixed value in **{Menu}→{Setup}→{System}→{6. Upgrade}→{Setup}**

6-7-8. Factory Setup

Move to **{Menu}** → **{Setup}** → **{System}** → **{7. Factory Setup}.**
Select {Yes} when Initialization (Yes/No) Window appears.

Caution	Note that all setting data will be initialized and it goes back to Factory Default Value.

6-7-9. RS232C Port

Move to **{Menu}** → **{Setup}** → **{System}** → **{8. RS232C Port}**.
On the selection window, select the device using the arrow keys and the Select button.

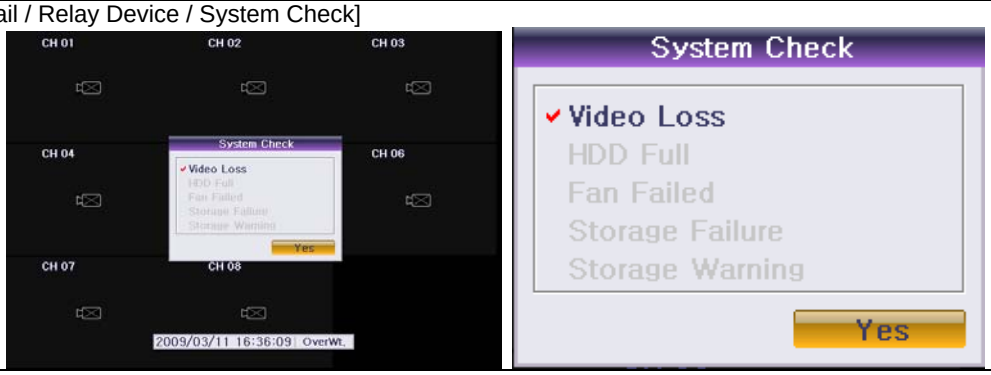
6-7-10. Error Alarm Action

Alarm is to notify occurrences such as events [Sensor, Motion and Audio] and system incidents [Video Signal disconnected/ HDD full/ FAN fail/ HDD fail/ HDD warning] to [Alarm/ E-mail/ Relay01/ System check].
Move to **{Menu}** → **{Setup}** → **{System}** → **{9. Error Alarm Action}**.
Select [Alarm/E-mail/Relay01/System Check]. The user can select all by ticking as shown below.

[Figure 5-**58.** Error Alarm Action]

📝	※ System Check System Check is to pop up the System Check Window on the monitoring screen. It indicates [Buzzer /

E-mail / Relay Device / System Check]



6-7-11. Error Alarm Duration

Events and others
Move to **{Menu}** → **{Setup}** → **{System}** → **{10. Error Alarm Duration}**.
In the selection window, set Alarm out time using the arrow keys and the Select button.

6-7-12. Menu Time Out

If no input is made in the System Setup menu using the front buttons, remote controller, or mouse, the system automatically shifts to real-time monitoring mode.

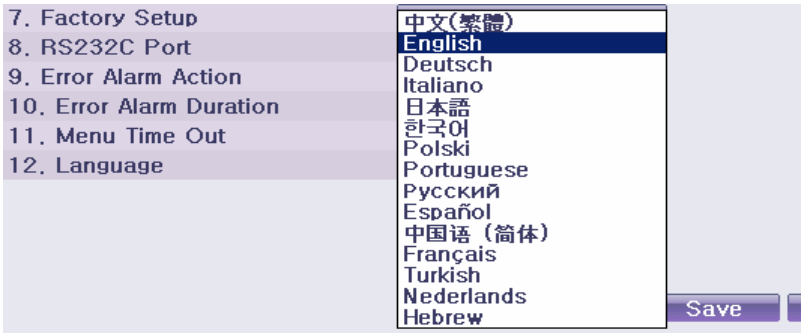
Move to **{Menu}** → **{Setup}** → **{System}** → **{11. Menu Time Out}**.
On the selection window, select the time zone you want to set using the arrow keys and the Select button.

Off	Automatic Menu Exit is not used. ※ The user can exit the menu by pressing the **[ESC]** button in the System menu..
1/2/3 MIN	If there is no input using the front button, remote controller, or mouse, the system will shift to real-time monitoring mode.
User Setup	The user can enter the time directly. ※ The time can be set to 5 ~ 99 seconds.

Selecting User Setup causes the input window to appear.
Enter the time using the numeric buttons or the arrow keys and the Select button.

6-7-13. Language

This feature is used to select the language for the On Screen Display (OSD) menu of the system. VERTEX RTH, H.8 AND H.16 series supports 15 languages.



[Figure 5-**59**. Language Selection Window]

Move to **{Menu}** → **{Setup}** → **{System}** → **{12. Language}**.
On the selection window, select the language using the arrow keys and the Select button.

APPENDIX

A/P/P/E/N/D/I/X

1) Recommended HDD Specification

Type	Size	Capacity	Buffer	RPM
SATA I, II	3.5“ 1, 2 Flat	Up to 1.5TB	over 8MB	over 7200

2) Recommended PTZ Camera Protocol

NO	Vendor	Model	Protocol
1	A.D.	ULTRA_7	SENSORMATIC
		ULTRA_8	
2	CHOU	COHU3925	COHU
3	Dongyang	Dongyang	DRX-500
			DY-255
4	DYNACOLOR	DSCP	DSCP
5	EYE VIEW	EYE VIEW	EYE VIEW
6	FINE SYSTEM	CRR-1600i/s	CRR-1600i/s
7	GE	GE	GE_KARATEL
8	GSP	GSP	CYBERSCAN_1
9	HITRON	FASTRAX2	FASTRAX2
10	HONEYWELL	SCANDOME2	HSDN-251
11	LG	LG	LG_MULTIX,
			LG_OLD
12	MIKAMI	MIKAMI	MIKAMI
13	ORIENTAL	ORX-1000	ORX-1000
14	PANASONIC	WVCS854	WVCS854
15	PELCO	PELCO	PELCO – D
			PELCO - P
16	PHILIPS	PHILIPS	PHILIPS
17	PROLINE	PROLINE	PROLINE_UK
18	RIFATRON	RIFATRON-1	RIFATRON
19	SAMSUNG TECHWIN	SAMSUNG	SPD-1600
			SCC641
20	SUNJIN	SUNJIN	SUNJIN
21	VICON	VICON	VICON
22	YOKO	YOKO	YOKO

3) Recommended USB2.0 Device

USB2.0 Device	Media	File System
Memory Stick	Flash Type	FAT32
2.5” Portable USB HDD	HDD Type	FAT32
CD	CD R, R/W	ISO9660
DVD	DVD +R, +R/W	ISO9660